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Original Articles

ABDOMINAL CRISES CAUSED BY MECKEL'S DIVERTICULUM.*

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Within a period of two months during the latter part of the last year, there occurred in my practice four cases of Meckel's diverticulum.[1] In one of these cases, the diverticulum was the source of no trouble, but was met with during an operation for gunshot wound of the bowels. In the three other cases, the diverticulum was the occasion for the operation. This unusual experience aroused my interest in the subject and occasioned my determination to write the paper herewith presented.

The basis of the paper consists of my personal experience, a study of the literature of the subject and an analysis of the reports of 184 cases which I have tabulated and which includes 35 cases not hitherto reported. It is, of course, not pretended that this list is complete, but it comprises all the cases I could find in the literature available that were reported sufficiently in detail to fulfill my purpose in the study of the subject. Abstracts of many other cases were found, but they were too meager of detail to make their report worth while.

My purpose is to add, if possible, a little to the practical side of our knowledge on this subject, and therefore no attempt will be made in the direction of an exhaustive study of the embryologic, anatomic and pathologic phases of it. It is sufficient for our purpose to know that what we call Meckel's diverticulum is a fetal remnant of the intestinal tract, which in the normal course of events disappears by involution before birth; that because of an arrest of development it may remain as a patulous duct connecting the intestinal tract with the outer world via the umbilicus, or as a blind sac or cord connected to the umbilicus or to any other part of the abdominal walls or to any of the abdominal organs, or as a cul-de-sac unattached save at its origin; that it may have its origin in any part of the intestinal tract, but usually arises from the ileum[2]; that it may arise from any part of the circumference of the bowel, but usually arises opposite the mesenteric attachment; that histologically it agrees with the intestine, save in those cases wherein the involution has proceeded to such an extent as to leave only blood vessels and connective tissue.

Meckel's diverticulum is probably present in from 1 to 2 per cent. of all individuals. It is said by Halstead to be the cause of intestinal obstruction in 6 per cent. of all cases.[3] In my own list of 184 cases it caused obstruction by band in 101 cases; volvulus, intussusception, diverticulitis and other crises in 83 cases. The average age at which crises occurred, according to my table, is 21 years and 2 months, and yet this includes 6 patients over 50, 1 being 81 years of age. Judging from these facts, we are warranted in concluding that, in proportion to the frequency of its presence, Meckel's diverticulum is one of the most frequent sources of grave abdominal trouble, and, therefore, not as Kelynack and others think, of slight practical importance. A Meckel's diverticulum is a greater menace to life than is an appendix vermiformis.

A study of the different ways in which the diverticulum causes trouble is of much importance. From the list of cases here presented we find that it has caused obstruction of the bowel by a band (Figs. 1, 2, 3) in 101 cases, been the cause of volvulus in 8 cases, and of intussusception in 20 cases. Diverticulitis was the cause of the crisis in 17 cases, prolapse of the bowel through a patent diverticulum in 2 cases, typhoid perforation in 5 cases, traumatic perforation in 1 case, and tubercular ulceration in 2 cases. In the 21 cases of hernia reported in this paper, the diverticulum was the cause of the trouble demanding immediate operation in all but one (Figs. 4, 5); in that one it was simply noted as forming the content of the sac. The diverticulum is more often found in umbilical than in any other variety of hernia (Figs. 6, 7), and not infrequently it is found in congenital inguinal hernia, as pointed out by Bunts.[4] It may form the only content of the sac, a true hernia of the diverticulum, or it may occupy the sac in connection with other structures. That the existence in a hernia of a diverticulum adds materially to the danger of the case seems quite evident. Maylard,[5] quoting Hudson, mentions stricture of the gut from excessive obliteration of the diverticulum, but I found no other similar case reported, although Watson Cheyne[6] and others cite cases wherein stricture of the bowel has resulted from pathologic changes secondary to intussusception and other trouble originating in a diverticulum (Fig. 8). Fitz[7] in his paper cites cases of intramesenteric diverticulum (Fig. 9), and accounts for duplication of the intestine by the blind extremity of the diverticula thus located becoming attached to the intestinal wall, at which point communication is established by perforation (Figs. 10, 11). He also mentions the rare occurrence of branched diverticula cysts of the diverticulum form, and, in a few instances, have been the cause of the crisis. In one case in the list (Figs. 12, 13), the cyst produced volvu-

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1. Since this paper was written a fifth case has occurred in my practice. It was met during an operation for obstruction of the bowels and was causing no trouble. See Illustration.
2. The name diverticulum ileï indicates that the origin of the diverticulum is always the ileum and is therefore incorrect.
3. Annals of Surgery, vol. 35, p. 471.
4. Ann. of Surg., Oct. 1904.
5. Surgery of the Alimentary Canal, p. 471.
6. Ann. of Surg., Dec., 1904.
7. Am. Jour. of Med. Sciences, July, 1884.

lus, in one obstruction and gangrene of the bowel by traction, and in another the weight of a cyst developed in the free end of the diverticulum dragged it over a loop of bowel producing obstruction. In one case reported by Beach[8] the occasion for the operation was a pelvic tumor which proved to be a diverticulum filled with dried fecal matter.

In 5 cases the diverticulum was patent at the umbilicus. If the opening be large, the gut wall may prolapse and form the outer covering or sac of a hernia. Some of the numerous pathologic conditions produced and shapes assumed by Meckel's diverticulum, which have been observed, are herewith illustrated for the sake of clearness and brevity (Figs. 14, 15). To know the various locations, forms, attachments and pathologic changes which diverticula may present is important, in that the surgeon thus informed is in a sense forearmed. The most practical deduction from these facts seems to me to be, that, in the vast majority of cases of abdominal trouble due to Meckel's diverticulum, the trouble manifests itself primarily as a peritonitis or as an obstruction with or without strangulation (Figs. 16, 17, 18). The obstruction may be complete or incomplete throughout; or incomplete obstruction may be succeeded by complete obstruction. Symptoms of acute obstruction were manifest from the start in 118 cases. Incomplete obstruction was present throughout in 7 cases. In 17 cases there had been previous attacks of incomplete obstruction prior to the final attack of acute complete obstruction. In 20 cases, the symptoms were those of peritonitis, either circumscribed or general. In many cases the trouble was diagnosticated as appendicitis (Fig. 19), and in 1 case appendicitis existed as a complication in a case of strangulation of the bowel by the diverticulum, and in another (McArthur[9]) the appendix was gangrenous because of strangulation by a diverticulum acting as a band, the diverticulum itself being healthy. In cases of supposed appendicitis in which the conditions of the appendix when seen does not account for the symptoms, the probability of the existence of a diverticulitis should be borne in mind (Fig. 20). This point is illustrated in Keefe's case, in which a diagnosis of appendicitis had been made and on opening the abdomen the appendix was found adherent, but showing no evidence of recent inflammation. A further search revealed a mass of intestine adherent to a Meckel's diverticulum and producing obstruction. The adhesions were released and the diverticulum inverted. The patient recovered.

As in obstruction and strangulation of the bowel from other causes, so in those due to a diverticulum acting in a mechanical way, the symptoms of obstruction and strangulation are often followed by, or have added, symptoms of infection, i. e., peritonitis. In many cases the primary trouble is a diverticulitis with a subsequent formation of adhesions leading to obstruction. In these cases, of course, the symptoms of obstruction are preceded by symptoms of infection. In this class of cases the symptoms are very like those of appendicitis and this is the diagnosis usually made prior to operation.[10]

Of the cases here reported, the proportion of males to females is more than three to one, and the average age, as above stated, is 21 years and 2 months, so that while trauma is mentioned infrequently as an etiologic factor in the production of these crises, yet it would seem that the proponderance of males and the active period of life during which most cases occur would point to injury as among important causes (Fig. 21).

Oderfeld's case, reported by Halstead,[9] is the only one found in which a diagnosis was made prior to the operation. Just how the diagnosis was arrived at in this case does not appear quite clear.

As noted above, the symptoms arising in the crises due to Meckel's diverticulum, barring those patulous at the umbilicus, are in no way distinctive, but are similar to those met with in obstruction of the bowel by bands, in volvulus, in intussusception, in perforation and in appendicitis, etc., and hence a positive diagnosis without opening the abdomen is impossible, save in rare instances. An exact diagnosis, however, is not necessary before operating and to wait for it is neither good sense nor good surgery. All that is necessary before operating in these, as in similar cases, is what might be well termed a working diagnosis, and to wait for anything more is to sacrifice life. The frightful mortality which obtains in the cases under consideration, may be almost entirely attributed to delay in surgical interference. It seems to me that one of the most useful purposes that the reports appended can serve, is to emphasize the fact, well known among surgeons, that delay in operating is the most fruitful source of mortality and morbidity in surgical diseases.

In this list of 184 cases, the mortality is in all 60 per cent. Of all those patients operated on, the mortality is 50 per cent. While in the cases in which diagnoses of strangulated hernia and appendicitis were made, and in which, therefore, the patients were operated on early, as is the rule in these conditions, the mortality is 10 per cent. Words might preach a more eloquent sermon against delay in surgical intervention, but not a more powerful one.

To cover the subject of the operative technic would be to cover the subject as it concerns numerous pathologic conditions, the operative technic of which has been fully discussed. It is only necessary, therefore, to speak of the disposition of the diverticulum itself. To me it seems much better to excise it than to invert it. To invert it would mean partially to obstruct the lumen of the bowel, nor does it seem to me far-fetched to suppose that this disposition of it would invite ulceration invagination and perforation of the bowel.

After excision of the diverticulum the treatment of the opening will depend on the size of it and its relation to the lumen of the gut. When the opening is small, a single purse-string suture is simple, safe and sufficient; in other cases, Lembert sutures will be better; and in still others a portion of the bowel, including the diverticulum, will have to be removed to avoid stricture.

In conclusion I want to urge the advisability of removing all diverticula that are found in the course of abdominal operations, whether they have been or are the source of the trouble or not, provided the exigencies of the case in hand do not contraindicate further operative procedure.

SUMMARY OF TABULATED CASES.

Number of cases herewith reported for the first time, 35; total number of cases reported, 184; deaths, 93; recoveries, 67; results not stated, 24.

Patients operated on, 139; deaths, 65; recoveries, 65, result not stated, 9.

Patients not operated on, 18; deaths, 18.

Cases in which treatment is not mentioned, 27.

Kind of crisis: hernia, 21 cases; umbilical, 10; inguinal, 8; scrotal, 2; result not stated, 1.

Patients with hernia operated on, 11; recoveries, 6; deaths, 4; result not stated, 1.

Patients with hernia not operated on, 5; deaths, 5. Cases of hernia in which treatment is not stated, 5.

8. Ann. of Surg., vol. 24, p. 484.
9. Cited by Halstead, Ann. of Surg., vol. 35, p. 492.
10. Erdmann: The Journal A. M. A., Jan. 21, 1905, p. 171.

Obstruction by band, 101 cases. Place of attachment of diverticulum, mesentery, 29; umbilicus, 22; free band about intestine, 9; to intestine, 11; brim of pelvis, 3; internal ring, 1; omentum, 1; diverticulum free, and acting as cyst, 2; stump of appendix, 1; mesorectum, 1; caught in loop of small intestine, 2; abdominal wall, 3; as band, place of attachment not stated, 16.

Volvulus, 8 cases; patients operated on, 7; deaths, 4; recoveries, 3; treatment not mentioned, 1

Intussusception, cases, 20; of bowel, 10; of diverticulum, 6; of bowel and diverticulum, 4. Patients operated on, 13; deaths, 8; recoveries, 5. Patients not operated on, 7; deaths, 4; result not stated, 3.

Patent at umbilicus, cases, 5; Patients operated on, 4; recoveries, 4; treatment not mentioned, 1; deaths, 1.

Diverticulitis, cases, 17; gangrenous, 6; deaths, 4; recoveries, 2. Due to presence of foreign body, 8; deaths, 7; result not stated, 1. Diverticulitis due to other causes, cases, 3. Number of cases of diverticulitis in which general peritonitis resulted, 8.

Perforation in typhoid, cases, 5; deaths, 5. Perforation from trauma, cases, 1; result not stated

Tubercular ulceration of diverticulum, cases, 2; deaths, 1; recoveries, 1.

Prolapse of bowel, cases, 2; deaths, 2.

Pelvic tumor, 1 case; recovery, 1.

Rupture of diverticulum causing obstruction from pressure of abscess, 1 case; result not stated. Summary: Males, 100; females, 50. Number of ages given, 137; result not stated, 54. Average age, 21 years, two months.

REPORTED CASES.

CASE 1.—Dowse: (Cited from Bunts, *Ann. of Surg.*, Oct., 1904.) Female, aged 27. Kind of crisis, direct inguinal hernia. Symptoms, a fecal fistula had formed owing to the collection of fecal matter in the diverticuum. Treatment, patient not operated on. Result, death. Remarks: At postmortem right direct inguinal hernia was found, in the sac of which the diverticulum was found adherent to the anterior wall of the sac. The diverticulum was ulcerated and perforated owing to accumulation of fecal matter within it, thus forming fistula in right groin.

CASE 2.—Mueller: (Cited from Bunts, *Ann. of Surg.*, Oct. 1904.) Fetus, aged 8 months. Kind of crisis, umbilical hernia. The child was born dead, having umbilical hernia, the sac of which contained an adherent diverticulum.

CASE 3.—Ahlfeld: (Cited from Bunts, *Ann. of Surg.*, Oct., 1904.) Female, aged a few days. Kind of crisis, umbilical hernia. The child was born slightly prematurely, having an umbilical hernia, the sac of which contained a diverticulum two inches long, adherent to the umbilical ring. The child lived but a few days after birth.

CASE 4.—Braus: (Cited from Bunts, *Ann. of Surg.*, Oct., 1904.) Age, 7. Kind of crisis, umbilical hernia. Treatment, laparotomy; the diverticulum was excised. Result, not stated. Remarks: Tumor at umbilicus, on being opened revealed a diverticulum as the only content.

CASE 5.—Gluck: (Cited from Bunts, *Ann. of Surg.*, Oct., 1904.) Fetus born at 7 months. Kind of crisis, umbilical hernia. The symptoms consisted of signs of peritonitis and strangulation. Treatment, radical operation for hernia; the diverticulum was excised. Result, not stated. Remarks: On opening the belly, accessory mesenteric fold was found bound to a diverticulum passing over the intestine.

CASE 6.—Dunchamp: (Cited from Bunts, *Ann. of Surg.*, Oct., 1904.) Age and sex not stated. Kind of crisis, umbilical hernia. Remarks: Umbilical hernia with thin covering, reducible, covering burst and the contents including a diverticulum flowed out.

CASE 7.—Rosenblaum: (Cited from Bunts, *Ann. of Surg.*, Oct. 1904.) Age and sex not stated. Kind of crisis, umbilical hernia. Remarks: A Meckel's diverticulum was found during a radical operation for hernia.

CASE 8.—Hallet: (Cited from Bunts, *Ann. of Surg.*, Oct. 1904.) Female, aged 2 hours. Kind of crisis, umbilical hernia. Treatment, laparotomy: the diverticulum was excised. Result, not stated. Remarks: Operation revealed the contents of the sac to be cecum, small intestine and a diverticulum.

CASE 9.—Tiedeman: (Cited from Bunts, *Ann. of Surg.*, Oct., 1904.) Child born at full term, few hours old. Kind of crisis, umbilical hernia. Remarks: On opening the hernial sac it was found full of yellowish fluid and communicating with the lumen of the intestine. Tiedeman thought this a true umbilical vesicle, but Roth regarded it as an enterocyst.

CASE 10.—Carle: (Cited from Bunts, *Ann. of Surg.*, Oct., 1904.) Age and sex not stated. Kind of crisis, umbilical hernia. Treatment, operation. Result not stated. Remarks: Umbilical tumor, hernia of Meckel's diverticulum was diagnosticated. Operation showed the sac to contain a small tumor pierced at the summit, out of which fecal matter exuded.

CASE 11.—Benevoli: (Cited from Bunts, *Ann. of Surg.*, Oct., 1904.) Age, not stated, male. Kind of crisis, scrotal hernia. The symptoms were those of strangulation. Treatment, no operation. Result, death. Remarks: Postmortem revealed a diverticulum extending into the scrotum. Intestine below the attachment not of a natural color.

CASE 12.—Morgagni: (Cited from Bunts, *Ann. of Surg.*, Oct., 1905.) Male, aged 50. Kind of crisis, inguinal hernia. The symptoms were those of strangulation. Treatment, no operation. Result, death. Remarks: Postmortem revealed small process or diverticulum given off of the small intestine as it crossed the internal ring. The incarceration caused the obstruction.

CASE 13.—Littre: (Cited from Bunts, *Ann. of Surg.*, Oct., 1904.) Male, aged 48. Kind of crisis, scrotal hernia. Remarks: Diverticulum was found in the hernial sac.

CASE 14.—Thompson: (Cited by Bunts, *Ann. of Surg.*, Oct., 1904.) Male, aged 50. Kind of crisis, inguinal hernia. Symptoms, the patient had some trouble occasionally with hernia. After prolonged attempt at reduction of the hernia, lasting about three hours, reduction was finally accomplished. The same night the patient showed symptoms of peritonitis and strangulation. Treatment, laparotomy. Result, death. Remarks: On opening the belly the cavity was found full of fecal matter and fluid. No perforation could be found in small intestine at operation. At autopsy a Meckel's diverticulum was found perforated at tip, and showing evidence of adhesion probably to sac of hernia.

CASE 15.—Dungan: (Cited from Bunts, *Ann. of Surg.*, Oct., 1904.) Child, male. Kind of crisis, inguinal hernia. The symptoms were those of strangulation. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The hernial sac contained coils of small intestine with a diverticulum wedged between them at the neck of the sac, making reduction by taxis impossible.

CASE 16.—Banks: (Cited from Bunts, *Ann. of Surg.*, Oct., 1904.) Age and sex not stated. Kind of crisis, hernia variety not stated. Character of symptoms not noted. Treatment, laparotomy; the diverticulum was excised with portion of small bowel. Result not stated. Remarks: The diverticulum is mentioned as being part of the contents of hernial sac.

CASE 17.—Webster: (Cited from Bunts, *Ann. of Surg.*, Oct., 1904.) Female, aged 42. Kind of crisis, inguinal hernia. The symptoms were those of acute and complete strangulation. Treatment, laparotomy; the diverticulum was excised; Lembert sutures were used. Result, recovery. Remarks: The diverticulum had a well-defined lumen densely adherent in canal.

CASE 18.—Buntz: (*Ann. of Surg.*, Oct., 1904). Male, aged 23. Kind of crisis, inguinal hernia. The symptoms were those of partial obstruction. Treatment, laparotomy; the diverticulum with portion of small intestine was resected, union by Murphy button. Result, recovery. Remarks: On opening the sac, a knuckle of constricted diverticulum was revealed. The diverticulum was gangrenous and the intestine was also gangrenous at point of origin of the diverticulum.

CASE 19.—Karajan: (*Wiener klin. Wochft.*, 1901.) Male, aged 30. Kind of crisis, inguinal hernia. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was found attached to the apex of the hernial sac. By this position it held two or three coils of small intestine in the sac.

CASE 20.—Roswell Park: (Personal communication.) Male, aged 22. The symptoms were those of complete obstruction. Treatment, radical operation for hernia. Result, recovery. Remarks: The diverticulum formed the content of the sac.

CASE 21.—Moore: (THE JOURNAL A. M. A., Oct. 4, 1904.) Child, aged seven months. Kind of crisis, umbilical hernia: Symptoms, the child was weak, constantly crying and straining. Treatment, laparotomy; the hole in the tip of the diverticulum was closed with Lembert suture; the diverticulum was left undisturbed otherwise because of condition of patient. Result, recovery. Remarks: Umbilical protuberance was gradually enlarging up to the time of operation. Operation revealed a diverticulum as content of sac.

CASE 22.—Jos. Bryant: (Trans. New York Surg. Soc., *Ann. of Surg.*, Jan., 1893.) Male, aged 68. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the inflated bowel was incised, and the free edges stitched to edges of wound. Result, death. Remarks: The diverticulum was attached to the mesentery, constricting bowel as a band. The bowel was gangrenous.

CASE 23.—Morton: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Female, aged 9. Kind of crisis, obstruction by band. The symptoms were those of appendicitis and partial obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was adherent to the umbilicus; a loop of bowel was caught under the band thus formed.

CASE 24.—Hall: (Cited from Halstead, *Ann. of Surg.*, vol.xxxv.) Male, aged 3. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was attached to mesentery; a loop of bowel was caught under this band.

CASE 25.—Operator, Sellers: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Age and sex: 32, male. Character of symptoms, those of acute obstruction. Kind of crisis, obstruction by band. Treatment, laparotomy. Result, death. Remarks: Diverticulum attached to umbilicus, loop of ileum caught under band thus formed.

CASE 26.—Sellers: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 32. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, death. Remarks: The diverticulum was attached to the umbilicus producing obstruction by kinking bowel by traction.

CASE 27.—Fawcett: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Female, aged 11. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was attached to "bowel" ring constriction.

CASE 28.—Snow: (Cited from Halstead, *Ann. of Surg.*, vol. 35.) Male, aged 3. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, no operation. Result, death. Remarks: At autopsy, the diverticulum was found attached to mesentery acting thus as a constricting ring.

CASE 29.—Mackay: (Cited from Halstead, *Ann of Surg.*, vol. xxxv.) Young female. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the cord was divided. Result, recovery. Remarks: The diverticulum was attached to left to transverse colon, acting as band.

CASE 30.—Hohlbeck: (cited from Halstead, Ann. of Surg., vol. xxxv.) Male, aged 4 years, 6 months. Kind of crisis, obstruction by band. The symptoms consisted of repeated attacks of pain and vomiting with a final attack of complete obstruction. Treatment, laparotomy; resection of portion of gut with diverticulum. Result, death. Remarks: The diverticulum was attached to omentum, thus producing obstruction by traction.

CASE 31.—Hohlbeck: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Female, aged 39. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; resection of portion of gut with diverticulum; union with Murphy button. Result, recovery. Remarks: The diverticulum was free, knotted around intestine, thus causing stricture.

CASE 32.—Symonds: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Female, aged 15. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy. Result, death. Remarks: The diverticulum was adherent to gangrenous intestine, thus causing constriction.

CASE 33.—Symonds: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv). Female, aged 26. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, lap-

arotomy. Result, death. Remarks: "Gut folded around very wide diverticulum."

CASE 34.—Schmidt: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 15. Kind of crisis, obstruction by band. The symptoms were those of partial obstruction. Treatment, laparotomy. Result, death. Remarks: The diverticulum was attached to the umbilicus, thus producing obstruction by kinking bowel from traction.

CASE 35.—Berard and Delore: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 20. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was attached to the umbilicus; there was obstruction of ileum and adhesion of loops.

CASE 36.—Bell: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Female, aged 16. Kind of crisis, obstruction by band; symptoms were those of complete obstruction. Treatment, laparotomy. Result. Recovery. Remarks: The diverticulum was attached to the umbilicus, thus kinking the bowel from traction.

CASE 37.—Nedivill: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Female, aged 16. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy, "cord divided." Result, recovery. Remarks: The diverticulum was attached to the umbilicus, a loop of bowel was caught under band thus formed.

CASE 38.—Carle and Chevet: (Cited from Halstead, *Ann. of Surg.*, vol xxxv.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was attached to the mesorectum; a loop of bowel was caught under this band.

CASE 39.—De Gueovain: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 16. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: A pear-shaped diverticulum was attached to the mesentery, producing a twist in the small intestine at the point of origin of the diverticulum by traction.

CASE 40.—Kammerer: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 20. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, the diverticulum was removed with gangrenous bowel. Result, death. Remarks: The diverticulum was attached to a loop of bowel; another loop was caught under this band.

CASE 41.—Kammerer: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 44. Kind of crisis, obstruction by band. The symptoms consisted of obstruction with fecal fistula. Treatment, laparotomy; the diverticulum was excised. Result, recovery, with fecal fistula. Remarks: The diverticulum was attached to the umbilicus, thus producing obstruction from traction. At the first operation an artificial anus was established. The diverticulum was found at second operation.

CASE 42.—Kammerer: (Cited from Halstead, *Am. of Surg.*, vol. xxxv.) Female, aged 18. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the cord was divided. Result, recovery. Remarks: The diverticulum was attached to the mesentery, acting as a band under which a loop of bowel became strangulated.

CASE 43.—Thompson: (Cited from Halstead, *Ann. of Surg.*, vol xxxv.) Male, aged 29. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised, Lembert sutures were used. Result, death. Remarks: The diverticulum was attached to mesentery, acting as band.

CASE 44.—Erdmann: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 20. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction complicated with appendicitis. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was attached to the umbilicus; a loop of bowel was caught under the band thus formed.

CASE 45.—Halstead: (*Ann. of Surg.*, vol. xxxv.) Male, aged 24. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. The history showed several previous attacks of pain. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was attached to root of mesentery, thus acting as a band.

CASE 46.—Taylor: Trans. Phila. Academy of Surg., *Ann. of* Surg., vol. xxxvii.) Female, aged 20. Kind of crisis, obstruction by band. The history showed previous attacks of pain about one year previous to operation; the later symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum wound around the gut through a hole in the mesentery, thus acting as constricting band.

CASE 47.—Gildersleeve: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 29. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, patient was not operated on. Result, death. Remarks: The diverticulum was attached to mesentery: the gut was caught under this band.

CASE 48.—Fox: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 5. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, patient was not operated on. Result, death. Remarks: The diverticulum was attached to the mesentery, acting as band; the diverticulum had ruptured at base.

CASE 49.—Heresco: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy, the cause of strangulation was not found. Result, death. Remarks: Autopsy revealed the diverticulum attached to the mesentery: a loop of bowel was caught under this band.

CASE 50.—Jordan: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 19. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; a portion of the gut was resected, lateral anastomosis. Result, death. Remarks: The diverticulum was attached to the umbilicus, causing obstruction by traction; the bowel was gangrenous.

CASE 51.—Latz: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 4. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy. Result, death. Remarks: The diverticulum was attached to the mesentery; the bowel was caught under this band.

CASE 52.—Latz: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Female, aged 12. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was attached to the mesentery; the gut was caught under this ring.

CASE 53.—Broca: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 7 weeks. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the gut was released. Result, death. Remarks: The diverticulum was attached to the mesentery; the gut was caught under band thus formed.

CASE 54.—Elliot: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 30. Kind of crisis, obstruction by band. Treatment, laparotomy; the diverticulum was excised. Result, death. Remarks: The diverticulum was attached to the umbilicus; the gut had kinked and twisted at point of origin of diverticulum.

CASE 55.—Councilman: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, not mentioned. Result, death. Remarks: Autopsy revealed a diverticulum attached to the mesentery under which a loop of bowel became caught and gangrenous.

CASE 56.—Boyle: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Age and sex not mentioned. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; "constriction removed." Result, death. Remarks: The diverticulum was attached to umbilicus, loop of bowel was caught under this tensely drawn band.

CASE 57.—Ochsner: (Cited from Halstead, *Ann of Surg.*, vol. xxxv.) Male, aged 81. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the loop was disengaged. Result, death. Remarks: The diverticulum was attached to the mesentery; a loop of bowel was caught under band thus formed.

CASE 58.—Prince: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Female, aged 4. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; a portion of gut was resected, including diverticulum; union by Murphy button. Result. death. Remarks: The diverticulum was attached to the mesentery, a loop of bowel was caught under the band thus formed.

CASE 59.—Oderfeld: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was attached to the mesentery; a loop of gut was caught under this band. This case was diagnosticated as obstruction by Meckel's diverticulum before operation.

CASE 60.—Zurnrinkle: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 19. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, death. Remarks: The diverticulum was attached to the mesentery; a loop of bowel caught under this band thus formed.

CASE 61.—Allen: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 34. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, not mentioned. Remarks: The diverticulum was attached to the umbilicus; the gut was twisted about this band.

CASE 62.—Prendelsberge: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 51. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy. Result, death. Remarks: Cause of obstruction was not found at operation. Autopsy revealed a diverticulum attached to mesentery acting as a band in constricting the bowel.

CASE 63.—Taylor: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 22. Kind of crisis, obstruction by band. Treatment, laparotomy; "gut released." Result, death. Remarks: The diverticulum was attached to the gut for one and one-half feet above its origin; a loop of gut was caught under this band.

CASE 64.—Campbell: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 71. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, patient was not operated on. Result, death. Remarks: (Autopsy) the diverticulum was free, acting as a band.

CASE 65.—Walsberge: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 25. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; "gut released." Result, death. Remarks: The diverticulum was free—ends obliterated; there was obstruction by traction at point of origin of diverticulum; diverticulum formed a cyst; the intestine was necrotic.

CASE 66.—Mintz: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 24. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, no operation. Result, death. Remarks: (Autopsy) The diverticulum was attached to the mesentery; a loop of bowel was caught under this band.

CASE 67.—Willams: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 25. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy. Result, death. Remarks: The diverticulum was attached to the mesentery; a loop of bowel was caught under this band.

CASE 68.—Morgan: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 38. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was attached to the mesentery; a loop of bowel was caught under this band.

CASE 69.—McArthur: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 40. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the appendix and diverticulum were excised. Result, death. Remarks: The diverticulum was attached to the mesentery and to the umbilicus; the appendix was caught under this tensely drawn band, becoming gangrenous. There was rupture of the appendix with peritonitis.

CASE 70.—Henrotin: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; strangulation was released. Result, recovery. Remarks: The diverticulum was attached to stump of appendix by inflammatory adhesions; the intestine was twisted and obstructed.

CASE 71.—Davison: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 7. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; strangulation was released. Result, death. Remarks: The diverticulum was attached to another loop of intestine.

CASE 72.—Bevan: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Female, aged 22. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was attached to the umbilicus, thus acting as a band.

CASE 73.—Bevan: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 35. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum with terminal ligament formed a ring.

CASE 74.—Picque: (*Munch. med. Wochft.*, May, 1898.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of acute complete obstruction. Treatment, laparotomy; the diverticulum was cut between ligatures. Result, not stated. Remarks: The diverticulum encircled the intestine, crooking it.

CASE 75.—Keefe: (*Boston Med. and Surg. Jour.*, Feb., 1905.) Male, aged 21. Kind of crisis, obstruction by band. The symptoms were those of acute complete obstruction. Treatment, laparotomy; the diverticulum was excised, stump inverted, and Lembert sutures used. Result, recovery. Remarks: The diverticulum was wound around the intestine.

CASE 76.—Keefe: (*Boston Med. and Surg. Jour.*, Feb., 1905.) Male, age 17. Kind of crisis, obstruction by band. The symptoms were those of complete obstruction. Treatment, laparotomy; the diverticulum was excised; Lembert sutures were used. Result, death. Remarks: The diverticulum was adherent to coils of intestine.

CASE 77.—Karajan: (*Wiener klin. Wochft.*, 1901.) Male, aged 20. Kind of crisis, obstruction by band. When young, the patient had a fistula opening at the umbilicus, which would heal and break again. When taken to the hospital he had been suddenly taken with pain and vomiting. Treatment, laparotomy. The diverticulum was excised. Result, recovery. Remarks: The diverticulum was attached to the umbilicus, acting as band.

CASE 78.—Karajan: (*Wiener klin. Wochen.*, 1901.) Male, aged 38. Kind of crisis, obstruction by band. The patient had had similar attacks previously to present one of acute obstruction. Treatment, laparotomy. The diverticulum was excised. Result, death. Remarks: The diverticulum was attached to posterior abdominal wall, acting as band.

CASE 79.—Thienhaus: (*New York Med. Jour.*, February, 1902.) Male, aged 17. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy. The diverticulum was excised. Czerny-Lembert sutures were used. Result, recovery. Remarks: The diverticulum was attached to the umbilicus; a loop of bowel was caught under band thus formed.

CASE 80.—Roswell Park: (Personal communication.) Male, aged 40. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy. Result, recovery. Remarks: The diverticulum was adherent, acting as a band.

CASE 81.—W. J. Mayo: (Personal communication.) Male, aged 14. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. There was a history of similar previous attacks. Treatment, laparotomy. Result, not mentioned. Remarks: The diverticulum was adherent, acting as a band.

CASE 82.—W. J. Mayo: (Personal communication.) Male, aged 26. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. There was a history of similar attacks previous to operation. Treatment, laparotomy. Result, not mentioned. Remarks: The diverticulum was adherent, acting as a band.

CASE 83.—Senn: (Personal communication.) Age and sex not mentioned. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy. The diverticulum was excised. Result, recovery. Remarks: The diverticulum was adherent, acting as a band.

CASE 84.—Senn: (Personal communication.) Age and sex not mentioned. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy. The diverticulum was excised. Result, recovery. Remarks: The diverticulum was adherent, acting as a band.

CASE 85.—B. M. Ricketts: (Personal communication.) Male, aged 27. Kind of crisis, obstruction by band. The symptoms were those of partial obstruction. Treatment, laparotomy, resection of ileocecal portion of bowel and ileocolic anastomosis with sutures. Result, death. Remarks: Incision revealed tuberculous peritonitis. The ileocecal valve was the seat of a tuberculous neoplasm. The ileum was invaginated under a band extending from the ileum to the colon on the right side.

CASE 86.—Ricketts: (Personal communication.) Male, aged 32. Kind of crisis, obstruction by band. The symptoms were those of partial obstruction. Treatment, laparotomy. The band was cut between ligatures. Result, death. Remarks: The diverticulum was adherent to the large bowel, acting as a band under which the gut became invaginated.

CASE 87.—Ricketts: (Personal communication.) Female, aged 39. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy. The diverticulum was cut between ligatures. Result, death. Remarks: The diverticulum was adherent, acting as a band.

CASE 88.—Dunning: (Personal communication.) Young female. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction, coming on after pelvic trouble. Treatment, laparotomy. A portion of bowel with diverticulum was resected; union by Murphy button. Result, recovery. Remarks: The diverticulum was adherent, causing constriction and kinking of bowel at point of origin.

CASE 89.—Rob Abbe: (Personal communication.) Age, 6; sex not stated. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, a portion of bowel with diverticulum was resected: end-to-end anastomosis. Result, recovery. Remarks: The diverticulum was adherent to the anterior abdominal wall; a loop of bowel was caught under this band.

CASE 90.—M. D. Mann: (Personal communication.) Male, age, 25. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction: there was a history of previous attacks of intestinal colic. Treatment, laparotomy; the obstruction was released. Result, recovery. Remarks: The diverticulum was adherent to the small intestine, forming a band under which the gut became strangulated.

CASE 91.—Purviance: (*Medical Summary*, April 1901.) Male, aged 9. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy. Result, death. Remarks: The diverticulum was attached to the umbilicus, acting as a band under which the gut became strangulated.

CASE 92.—Sexton: (*Indiana Med. Jour.*, December, 1902.) Male, aged 9. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction; there was a history of symptoms of partial obstruction. Treatment, laparotomy. Result, death. Remarks: The diverticulum was adherent to the intestine almost at point of origin, forming a ring under which the bowel was caught.

CASE 93.—Cazin: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 11. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; obstruction relieved. Result, death. Remarks: The diverticulum was unattached, "snared loop of intestines."

CASE 94.—Gibbon: (*Med. News*, vol. lxxxii.) Female, aged 10. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was adherent to the umbilicus, producing obstruction by kinking the bowel from traction.

CASE 95.—Chassevant: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, patient was not operated on. Result, death. Remarks (autopsy): The diverticulum was attached to the umbilicus, thus kinking of the bowel by traction.

CASE 96.—Guinard: Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Young, male. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy. Result, recovery. Remarks: The diverticulum was attached to the mesentery, thus constricting the bowel.

CASE 97.—Rixford: (Personal communication.) Aged 3. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: There was a diverticulum from the umbilicus to the intestine, with a band to the mesentery; the cecum and colon became strangulated under this band.

CASE 98.—MacDonald: (Personal communication.) Age, 30, male. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy. Result, death. Remarks: The diverticulum was adherent in pelvis; the gut caught under this band.

CASE 99.—Willy Meyer: (Personal communication.) Male, aged 45. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the diverticulum was excised. Result, death. Remarks: The diverticulum from intestine to umbilicus was adherent to mesentery, acting as a band.

CASE 100.—Lilienthal: (Personal communication.) Female, aged 7. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy, enteroenterostomy; the diverticulum was excised at tip. Result, death. Remarks: The diverticulum was the caliber of the small intestine with a terminal nipple-like projection, which was fished out from behind a fold of mesentery, which for some inexplicable reason seem to have constricted its base.

CASE 101.—Tiffany: (Personal communication.) Male. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy. Result, death. Remarks: The diverticulum was caught in loop of small intestine and had become gangrenous.

CASE 102.—Moore: (THE JOURNAL A. M. A., Oct. 4, 1902.) Male, aged 4. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the band was divided between ligatures. Result, recovery. Remarks: The sudden onset of symptoms gave rise to a diagnosis of obstruction by Meckel's diverticulum. The diverticulum was found attached to the mesentery and constricting the bowel.

CASE 103.—Abbot: (Cited by Moore, THE JOURNAL A. M. A., Oct. 4, 1902.) Male, aged 19. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was attached to the umbilicus; a loop of bowel was caught under the band thus formed.

CASE 104.—Greig Smith: (*Abdominal Surg.*, vol. ii.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the band was cut. Result, recovery.

CASE 105.—Greig Smith: (*Abdominal Surg.*, vol. ii.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy: the diverticulum was excised and the stump inverted: purse-string sutures were used. Result, not stated.

CASE 106.—Maylard: ("Surgery of the Alimentary Canal," p. 462.) Male, aged 4. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, no operation. Result, death. Remarks: The diverticulum was attached to the mesentery; a loop of bowel was caught under this band.

CASE 107.—Butcher: (Cited by Maylard, "Surgery of the Alimentary Canal," p. 462.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the band was divided. Result not stated.

CASE 108.—Pick: (Cited by Maylard, "Surgery of the Alimentary Canal," p. 462.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment not stated. Result not stated.

CASE 109.—Gillette: (Personal communication.) Male, aged 40. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction: there was a history of previous attacks of partial obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was attached to the mesentery; a loop of bowel was caught under this band.

CASE 110.—Gillette: (Personal communication.) Male, aged 32. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction: there was a history of previous attacks of partial obstruction. Treatment, laparotomy; the diverti-

culum was excised. Result, recovery. Remarks: The diverticulum was attached to the brim of the pelvis; a loop of bowel was caught under the band thus formed.

CASE 111.—Bernays: (Personal communication.) Male, aged 7. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the band was cut between ligatures. Result, recovery. Remarks: The diverticulum was attached to the umbilicus; a loop of bowel was caught under this band.

CASE 112.—Wyman: (Personal communication.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the obstruction was released. Result, recovery. Remarks: The diverticulum was wound about a coil of intestine.

CASE 113.—Wyman: (Personal communication.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the obstruction was released. Result, recovery. Remarks: The diverticulum was wound about a coil of intestine.

CASE 114.—Wyman: (Personal communication.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the diverticulum was excised. Result, death. Remarks: The diverticulum was wound about the intestine.

CASE 115.—Wyman: (Personal communication.) Age and sex not stated. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the diverticulum was excised. Result, death. Remarks: The diverticulum was wound around the intestine.

CASE 116.—C. C. Smith: (*Ann. of Surg.*, November, 1905.) Male, aged 19. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the band was cut between ligatures and the stump inverted; a purse-string suture was used. Result, recovery. Remarks: The diverticulum was adherent to left pelvic wall; a loop of bowel was caught under this band. The diverticulum also was twisted on itself.

CASE 117.—Markoe: (Personal communication.) Male, aged 22. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the diverticulum was excised and stump inverted. Result, death. Remarks: The diverticulum was adherent to the internal ring, acting as a band.

CASE 118.—Markoe (Personal communication.) Male, aged 19. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the diverticulum was excised. Result, death. Remarks: The diverticulum was adherent to the mesentery, acting as a band.

CASE 119.—Bowers: (Personal communication.) Female, aged 7. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, no operation. Result, death. Remarks (autopsy): The diverticulum was adherent to the mesentery, producing kinking of bowel by traction.

CASE 120.—Beavers: (Personal communication.) Male, aged 21. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction; no operation. Result, death. Remarks: The diverticulum was adherent to the anterior abdominal wall, and had become gangrenous by stretching and twisting; a loop of bowel had become strangulated under this band.

CASE 121.—Allan H. Williams: (Personal communication.) Male, aged 38. Kind of crisis, obstruction by band. The symptoms were those of acute obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was adherent to the small gut; a loop of bowel was caught under this band. After operation, a fistula formed which healed spontaneously.

CASE 122.—M. F. Porter: (Date of operation, Oct. 17, 1904.) Male, aged 19. Kind of crisis, obstruction by band with volvulus. The symptoms were those of acute complete obstruction. Treatment, laparotomy; the diverticulum was excised; a purse-string suture was used. Result, death. Remarks: The diverticulum was adherent to the left abdominal wall.

CASE 123.—M. F. Porter: (Operation, Oct. 11, 1904.) Male, aged 8. Kind of crisis, obstruction by band. The symptoms were those of acute complete obstruction. Treatment, laparotomy; the diverticulum was excised; purse-string sutures were used. Result, recovery. Remarks: The diverticulum was found adherent to the upper and left part of anterior abdominal wall; under it a loop of bowel had become strangulated.

CASE 124.—Arthur Barth: (*Ann. Surg.*, vol. viii.) Age and sex not given. Kind of crisis, prolapse of intestine. Symptoms not mentioned. Treatment, laparotomy; the diverticulum was excised; Czerny suture was used. Result, death. Remarks: Patulous diverticulum was inverted, complicating prolapse of intestine.

CASE 125.—Briddon: (*Ann. of Surg.*, 1888.) Child, aged 10 days. Kind of crisis, prolapse of intestine. Treatment, artificial anus established at first operation; diverticulum excised at second operation. Result, recovery. Remarks: Bowel was prolapsed from umbilical aperture; diverticulum was also protruding. An artificial anus was established because of the contracted state of the lower bowel.

CASE 126.—Beach: (*Ann. of Surg.*, vol. xxiv.) Female, aged 62. Kind of crisis, pelvic tumor, consisting of a diverticulum filled with hardened fecal material, connecting ileum and bladder. Treatment, laparotomy; the tumor was excised between ligatures. Result, recovery. Remarks: The best explanation of the cyst was that it was a Meckel's diverticulum; this was based on histologic examination.

CASE 127.—Malgaigne and Blanc: (Cited from Halstead, *Ann. of Surg.*, vol. xxxv.) Male. Kind of crisis, bowel obstruction. The symptoms were those of complete obstruction. Treatment laparotomy; the diverticulum was excised. Result, unknown. Remarks: Obstruction was caused by rupture of diverticulum and pressure of abscess on gut.

CASE 128.—W. W. Cheyne: (*Ann of Surg.*, December, 1904.) Male, aged 9. Kind of crisis, intussusception. The symptoms were those of complete obstruction. Treatment, laparotomy; lateral anastomosis. Result, recovery. Remarks: The bowel was obstructed by intussusception above origin of diverticulum.

CASE 129.—Studgaard: (Cited by Cheyne, *Ann. of Surg.*, December, 1904.) Male, aged 37. Kind of crisis, intussusception. The symptoms were those of complete obstruction. Treatment, laparotomy; resection of portion of bowel. Result, death. Remarks: The diverticulum was invaginated.

CASE 130.—Brunner: (Cited by Cheyne, *Ann. of Surg.*, December, 1904.) Child, aged 4. Kind of crisis, intussusception. The symptoms were those of complete obstruction. Treatment, laparotomy; resection of portion of bowel. Result, recovery. Remarks: A firm tumor was exposed within the cecum, having an accessory pancreas at apex imbedded in fat. The diverticulum was invaginated by the accessory pancreas, which in turn had caused intussusception of the bowel.

CASE 131.—Heller: (Cited by Cheyne, *Ann. of Surg.*, December, 1904.) Age and sex not stated. Kind of crisis, intussusception of diverticulum. Symptoms not stated. Remarks (report from specimen): There was invagination of the diverticulum leading to intussusception of the ileum and colon.

CASE 132.—Heller: (Cited by Cheyne, *Ann. of Surg.*, December, 1904.) Age 46. Kind of crisis, intussusception of diverticulum. Remarks (report of specimen): Patient died from the effects of perforating ulcer of stomach. Autopsy revealed an invaginated diverticulum.

CASE 133.—Heller: (Cited by Cheyne, *Ann of Surg.*, December, 1904.) Age and sex not stated. Kind of crisis, invagination of diverticulum. Remarks: At autopsy of a patient who died of pyonephritis an invaginated diverticulum was found.

CASE 134.—Maroni: (Cited by Cheyne, *Ann. of Surg.*, December, 1904.) Male, aged 22. Kind of crisis, intussusception of diverticulum. The symptoms were those of complete obstruction. Treatment, laparotomy. Result, death. Remarks: The diverticulum was invaginated into the bowel.

CASE 135.—Ewald: (Cited by Halstead, Ann. of Surg., vol. xxxv.) Female, aged 42. Kind of crisis, intussusception of diverticulum. The symptoms were those of partial obstruction. Treatment, no operation. Result, death. Remarks (autopsy): There was inflammatory stenosis above the point of origin of the diverticulum; the diverticulum was inverted; there was perforation of the intestine.

CASE 136.—Weil and Frankel: (Cited by Halstead, *Ann. of Surg.*, vol. xxxv.) Female, aged 4. Kind of crisis, intussusception of diverticulum and ileum. The symptoms were those of complete obstruction. Treatment, laparotomy; resection of portion of bowel. Result, death.

CASE 137.—Adams: (Cited by Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 42. Kind of crisis, intussusception. The symptoms were those of complete obstruction. Treatment, no operation. Result, death. Remarks: There was invagination of the diverticulum, causing an ileocolic intussusception.

CASE 138.—Adams: (Cited by Halstead, *Ann. of Surg.*, vol. xxxv.) Male. Kind of crisis, intussusception. The symptoms were those of complete obstruction. Treatment, no operation. Result, death. Remarks: The diverticulum was invaginated, causing ileocolic intussusception.

CASE 139.—Hohlbeck: (Cited by Halstead, *Ann of Surg.*, vol. xxxv.) Age, 18. Kind of crisis, intussusception. The symptoms were those of complete obstruction. Treatment, laparotomy; the invagination was dislodged and the diverticulum excised. Result, death. Remarks: There was inversion of the mucous lining of the diverticulum, causing intussusception of bowel.

CASE 140.—Robison: (Cited by Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 5. Kind of crisis, intussusception. The symptoms were those of complete obstruction. Treatment, laparotomy, resection of portion of bowel. Result, death. Remarks: There was inversion of diverticulum with invagination of the bowel above the diverticulum.

CASE 141.—Wainwright: (*Ann. of Surg.*, vol. xxxv.) Male, aged 24. Kind of crisis, intussusception. The symptoms were those of complete obstruction. Treatment, laparotomy: the intussusception was reduced and the diverticulum excised; Lembert sutures were used. Result, recovery. Remarks: The diverticulum formed the apex of intussuscepted bowel; the diverticulum itself being inverted, there were no adhesions; the intussusception was reduced on pressure.

CASE 142.—MacDonald: (Personal communication.) Male, aged 20. Kind of crisis, intussusception. The symptoms were those of complete obstruction. Treatment, laparotomy: resection of portion of intussuscepted bowel; union by Murphy button. Result, recovery. Remarks: There was intussusception of the diverticulum and of the ileum.

CASE 143.—McFarland: (*Phila. Med. Jour.*, May, 1901.) Male, aged 60. Kind of crisis, intussusception. The symptoms were those of partial obstruction. Treatment, no operation. Result, death. Remarks (autopsy): The diverticulum was twisted on itself and partly invaginated into the small intestine.

CASE 144.—M. F. Porter: (Operation, Oct. 2, 1904.) Male, aged 3. Kind of crisis, intussusception. The symptoms were those of complete obstruction. Treatment, laparotomy. Result, death. Remarks: The child was cold when carried to the table. The diverticulum was invaginated, causing intussusception of ileum.

CASE 145.—Dobson: (*Lancet*, April 25, 1903.) Male aged 41. Kind of crisis, intussusception. The symptoms were those of complete obstruction. Treatment, laparotomy: the gut was resected, including irreducible intussuscepted portion. Result, recovery. Remarks: The diverticulum formed the apex of intussuscepted bowel.

CASE 146.—Kuttner: (Cited by Halstead, *Ann of Surg.*, vol. xxxv.) Female, aged 49. Kind of crisis, intussusception. The diverticulum formed the apex of intussuscepted bowel.

CASE 147.—Stubenrauch: (Cited by Halstead, *Ann. of Surg.*, vol. xxxv.) Female, aged 5¼. Kind of crisis, intussusception. The symptoms were those of complete obstruction. Treatment, laparotomy. Result, death. Remarks: There was intussusception of the ileum starting at the point of origin of the diverticulum.

CASE 148.—Meyer and Lee: (*Amer. Jour. Med. Sciences*, March, 1905.) Age, 7 months. Kind of crisis, volvulus. The symptoms were those of acute obstruction. Treatment, laparotomy; the diverticulum was excised. Result, death. Remarks: The diverticulum formed a large cystic tumor which by traction produced twist in bowel.

CASE 149.—Gally and Jeannel: (Cited by Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 47. Kind of crisis, volvulus. The symptoms were those of acute obstruction. Treatment, laparotomy: resection of gangrenous bowel. Result, death. Remarks: The volvulus of the bowel was caused by traction at point of origin of diverticulum; the bowel was gangrenous.

CASE 150.—Dugan: (*Pediatrics*, vol. ii, p. 71.) Male, aged 11 months. Kind of crisis, volvulus. The symptoms were those of acute obstruction. Treatment, laparotomy; the diverticulum was

excised. Result, recovery. Remarks: The gut was twisted at the point of origin of the diverticulum: the diverticulum was also twisted at its base.

CASE 151.—Makins: (Cited by Halstead, *Ann of Surg.*, vol. xxxv.) Age and sex not stated. Kind of crisis, volvulus. The symptoms were those of acute obstruction. Treatment, laparotomy; the diverticulum was excised. Result, death. Remarks: The diverticulum was twisted, gangrenous and perforated.

CASE 152.—Mackenzie: (Cited by Halstead, *Ann of Surg.*, vol. xxxv.) Male, aged 37. Kind of crisis, volvulus. The symptoms were those of acute obstruction. Treatment, no operation. Result, death. Remarks: The diverticulum was attached to the umbilicus; the small bowel was twisted for five feet above the point of origin of the diverticulum.

CASE 153.—Walsberge: (Cited by Halstead, *Ann. of Surg.*, vol. xxxv.) Male, aged 14. Kind of crisis, volvulus. The symptoms were those of acute obstruction. Treatment, laparotomy; an artificial anus was established; the diverticulum was not excised. Result, death. Remarks (autopsy): The distended diverticulum was adherent to the umbilicus; torsion of diverticulum caused sharp twist at point of origin of diverticulum in gut; the intestine was necrotic.

CASE 154.—Taylor: (Cited by Halstead, *Ann of Surg.*, vol. xxxv.) Female, aged 6. Kind of crisis, volvulus. The symptoms were those of acute obstruction; there was a history of several previous similar attacks. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was cystic and twisted three times at base.

CASE 155.—Kramer: (Cited by Halstead, *Ann. of Surg.*, vol xxxv.) Male, aged 18. Kind of crisis, volvulus. The symptoms were those of acute obstruction. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: A pear shaped diverticulum was adherent to the mesentery; the small intestine was twisted at the point of attachment.

CASE 156.—Broca: (Cited by Hubbard, *Ann of Surg.*, vol. xxxv.) Male, aged 6 months. Kind of crisis, patent at umbilicus. Treatment, laparotomy; resection of diverticulum. Result, recovery. Remarks: There was a small red tumor at the umbilicus, into which a probe could be passed for some distance; the mucous membrane around the orifice was continuous with the skin.

CASE 157.—Broca: (Cited by Hubbard, *Ann. of Surg.*, vol. xxxv.) Male, aged 10 months. Kind of crisis, patent at umbilicus. Treatment, laparotomy. Resection of diverticulum. Result, recovery. Remarks: There was a small red tumor at the umbilicus; everted diverticulum; hole at summit of tumor.

CASE 158.—Neurath: (Cited by Hubbard, *Ann. of Surg.*, vol. xxxv.) Age 3 weeks. Kind of crisis, patent at umbilicus. Treatment, laparotomy; resection of diverticulum. Result, recovery. Remarks: There was a red tumor at the umbilicus, with fecal discharge from a hole in summit.

CASE 159.—Hubbard: (*Ann. of Surg.*, vol. xxxv.) Female, aged 1 month. Kind of crisis, patent at umbilicus. Treatment, laparotomy; the diverticulum was excised; two rows of Lembert sutures were used. Result, recovery. Remarks: There was a small red tumor at the umbilicus, with fecal discharge from a hole in the summit.

CASE 160.—Bird: (*Ann. of Surg.*, vol. xxxviii.) Male, aged 1 month. Kind of crisis, patent at umbilicus. Treatment not stated. Result, death. Remarks: Tumor at umbilicus, with hole at summit and escape of fecal matter.

CASE 161.—Darnall: (*N. Y. Med. Jour.*, Jan. 12, 1901.) Male, aged 22. Kind of crisis, diverticulitis. The symptoms simulated those of appendicitis. Treatment, laparotomy. Result, death. Remarks: The diverticulum was adherent to the umbilicus and was gangrenous at proximal end and perforated.

CASE 162.—Wright: (Cited from reprint of paper read before Dubuque Medical Society, 1899.) Male, aged 27. Kind of crisis, diverticulitis. There was a history of several previous attacks simulating appendicitis. Treatment, laparotomy; resection of portion of bowel and anastomosis by Murphy button. Result, recovery. Remarks: The small intestine was thin at base of diverticulum; the muscular coat had given way. The anastomosis was made of healthy tissue.

CASE 163.—Roth: (Cited by Halstead, *Medical Record*, 1902.) Age, 16 months. Kind of crisis, diverticulitis. The symptoms were those of general peritonitis. Treatment not stated. Result, death. Remarks: There was torsion of the neck of the diverticulum, resulting in gangrenous diverticulitis with general septic peritonitis.

CASE 164.—Swkonski: (Cited by Halstead, *Med. Record*, 1902.) Age, 16 months. Kind of crisis, diverticulitis. The symptoms were those of general peritonitis. Treatment, not stated. Result, death. Remarks: The diverticulum was gangrenous, causing general septic peritonitis.

CASE 165.—Squires: (THE JOURNAL American Medical Association, Oct. 4, 1902.) Male, aged 23. Kind of crisis, diverticulitis. The symptoms simulated appendicitis. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was inflamed, causing symptoms simulating appendicitis.

CASE 166.—Fitch: (Cited by Halstead, *Med. Record*, 1902.) Age and sex not stated. Kind of crisis, tuberculous ulceration of the diverticulum. Treatment not stated. Result not stated. Remarks: The diverticulum presented on examination three ulcers.

CASE 167.—Dixon: (Cited by Halstead, *Med. Record*, 1902.) Male. Kind of crisis, tuberculous ulceration of the diverticulum. Treatment not stated. Result, death. Remarks: The diverticulum presented on examination ulcerated condition.

CASE 168.—Chauffard: (Cited by Halstead, *Med. Record*, 1902.) age, 9. Kind of crisis, perforation of diverticulum during typhoid. The symptoms were those of general peritonitis. Treatment not stated. Result, death. Remarks: The diverticulum presented on examination a tumefied Peyer's patch, but no ulceration or perforation

CASE 169.—Halstead: (*Med. Record*, 1902.) Male, aged 26. Kind of crisis, perforation in typhoid. The symptoms were those of general peritonitis. Treatment, laparotomy; the diverticulum was excised. Result, death. Remarks: The diverticulum was perforated at tip.

CASE 170.—Halstead: (*Med. Record*, 1902.) Male, aged 45. Kind of crisis, perforation in typhoid. The symptoms were those of peritonitis. Treatment, laparotomy; the diverticulum was excised. Result, death. Remarks: The diverticulum was adherent to the anterior abdominal wall and was perforated at the tip.

CASE 171.—Galton: (Cited by Halstead, *Med. Record*, 1902.) Age, 12. Kind of crisis, perforation in typhoid. The symptoms were those of peritonitis. Treatment not stated. Result, death. Remarks: The diverticulum and ileum were perforated.

CASE 172.—Boinet and Delanglade: (Cited by Halstead, *Med. Record*, 1902.) Female, aged 35. Kind of crisis, perforation in typhoid. The symptoms were those of peritonitis. Treatment, laparotomy; the diverticulum was excised. Result, death. Remarks: The diverticulum was found perforated at tip.

CASE 173.—Korte: (Cited by Halstead, *Med. Record*, 1902.) Male, adult. Kind of crisis, diverticulitis. The symptoms were those of peritonitis. Treatment not stated. Result, death. Remarks: A foreign body was found in the diverticulum as cause of the inflammation.

CASE 174.—Demice: (Cited by Halstead, *Med. Record*, 1902.) Age and sex not stated. Kind of crisis, diverticulitis. The symptoms were those of peritonitis. Treatment not stated. Result, death. Remarks: A foreign body was found in the diverticulum as cause of inflammatory process.

CASE 175.—Best: (Cited by Halstead, *Med Record*, 1902.) Age and sex not stated. Kind of crisis, diverticulitis. The symptoms were those of peritonitis. Treatment not stated. Result, death. Remarks: The diverticulum was filled with cherry stones and perforated.

CASE 176.—Houston: (Cited by Halstead, *Med. Record*, 1902.) Age and sex not stated. Kind of crisis, diverticulitis. The patient had recurring attacks simulating appendicitis. Treatment not stated. Result, death. Remarks: The diverticulum was filled with fecal concretion.

CASE 177.—Galeazzi: (Cited by Halstead, *Med. Record*, 1902.) Age and sex not stated. Kind of crisis, diverticulitis. The symptoms were those of peritonitis. Treatment not stated. Result, death. Remarks: The diverticulum was filled with fecal concretion.

CASE 178.—Escher: (Cited by Halstead, *Med. Record*, 1902.) Age and sex not stated. Kind of crisis, diverticulitis. The symptoms were those of peritonitis. Treatment not stated. Result, death. Remarks: Round worms were found as cause of diverticulitis.

CASE 179.—Blanc: (Cited by Halstead, *Med. Record*, 1902.) Age and sex not stated. Kind of crisis, diverticulitis. The symptoms were those of peritonitis. Treatment not stated. Result, death. Remarks: A fish bone was cause of the diverticulitis.

CASE 180.—W. Kramer: (THE JOURNAL of the American Medical Association, 1898.) Age and sex not stated. Kind of crisis, diverticulitis. The symptoms were those of peritonitis. Treatment, laparotomy; resection of diverticulum between ligatures. Result, not stated. Remarks: A fruit seed was cause of the diverticulitis; diverticulum was perforated.

CASE 181.—Cramer: (Cited by Halstead, *Med. Record*, 1902.) Age and sex not stated. Kind of crisis, diverticulitis. The symptoms were those of peritonitis. Treatment not stated. Result not stated. Remarks: The diverticulum was ruptured as result of kick by horse, causing suppurative peritonitis.

CASE 182.—C. C. Smith: (*Ann. of Surg.*, November, 1905.) Age, 10. Kind of crisis, diverticulitis. The symptoms simulated appendicitis. Treatment, laparotomy; the diverticulum was excised between ligatures. Result, recovery. Remarks: The diverticulum was inflamed and adherent to the omentum.

CASE 183.—Nicolson: (Cited by Smith, *Ann. of Surg.*, November, 1905.) Age and sex not stated. Kind of crisis, diverticulum gangrenous with adhesions causing obstruction. Treatment, laparotomy. Result, death. Remarks: The diverticulum was gangrenous and adherent to umbilicus, acting as band, causing obstruction.

CASE 184.—Bernays: (Personal communication.) Age and sex not stated. Kind of crisis, diverticulitis. The symptoms were those simulating appendicitis. Treatment, laparotomy; the diverticulum was excised. Result, recovery. Remarks: The diverticulum was inflamed and gangrenous.

DISCUSSION.

DR. R. WINSLOW, Baltimore, mentioned two cases. In one he encountered a Meckel's diverticulum in a gangrenous hernia, which resulted fatally. The other patient, a woman, was recently taken to him with a lump in her right side. It was somewhat movable, and operation was performed under the impression that it was probably an appendicitis. Dr. Winslow found a pus tube with a large ovary, chronic appendicitis and Meckel's diverticulum, all surrounded by omentum. He removed the diverticulum and the appendix and the patient recovered.

DR. W. JEPSON, Sioux City, Iowa, said that it is certainly somewhat remarkable that there exists such a paucity of reported cases wherein this remnant of embryologic life has led to morbid processes demanding operative interference; especially is this so when it is considered that postmortem findings reveal the fact that from one to two of every hundred individuals are possessed of a Meckel's diverticulum. He is of the belief that serious intra-abdominal disturbances occasioned by this structure are observed by surgeons more frequently than is borne out by reported cases. Three cases coming to operation have been observed by him. One was the case of a child 16 months old, suffering from intussusception. When the bowel was exposed it was found that a Meckel's diverticulum was primarily intussuscepted, and this in turn caused an intussusception of the ileum. The intussusceptions of the ileum and of Meckel's diverticulum were readily reduced. Owing to the child's grave condition, Dr. Jepson did not feel warranted in removing the diverticulum

as he otherwise would have done. No difficulty has been experienced by the child since that time, now nearly three years ago. The second case occurred in a man 37 years of age who possessed a diverticulum which was dilated, being about the size of an orange. It contained fourteen concretions, each being about the size of a hickory nut, besides a great number of other food products, such as grape seeds, etc. The contents of the diverticulum produced such traction on the bowel that it led to an angulation with consequent intestinal obstruction, which in turn disturbed the circulation of the diverticulum so that it became gangrenous. The third case observed was one in which the diverticulum became strangulated in the sac of a right inguinal hernia.

DR. MILES PORTER stated that Dr. Cheyne says that in cases of intussusception of Meckel's diverticulum the mucous membrane alone is turned in, but in the three cases which he has examined it included all the coats.

EXSTROPHY OF THE BLADDER SUCCESSFULLY TREATED BY PETER'S METHOD.*

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I am submitting the report of a single case, because it illustrates well an exceedingly easy method of meeting difficult conditions and controlling them almost entirely, so far as theoretical considerations go, and quite entirely so far as this particular case is concerned.

It is hardly necessary to repeat that the ordinary plastic operations which contemplated the creation of a bladder, in cases of exstrophy of that organ, did not include the creation of a sphincter vesicæ; and yet a bladder with no sphincter is really no bladder, but is only a wider part of the urinary tract. After the most brilliant success in an operation of this type the patient has to wear a urinal, his real bladder, hanging down by his leg.

The utilization of the colon or rectum as a receptacle for the urine, an artificial reversion to the avian type, was resorted to, in order to make the sphincter ani do the work of the absent sphincter vesicæ. The genuine brilliancy of the idea, which may be credited to John Simon[1] in 1805 could not at the time of its inception be rewarded by a practical result, for the sepsis that naturally followed any such operation at that period killed the patient. The same sepsis has stood steadily in the way of the method during all the intervening years and probably will always stand there, but in some details it has been circumvented, more especially the septic peritonitis, by the simple plan of avoiding the peritoneum, while the septic nephritis, unless statistics wholly mislead, has been so long postponed as to give rise to the hope that it may never occur.

The operation accomplishing this, described by the originator, George A. Peters,[1] of Toronto, avoids opening the peritoneum by confining the work to the space in the abdomen and pelvis, below the vesicorectal limits of the peritoneum, in both males and females, and so narrows the possibility of septic danger to that inherent in all operation work and avoidable in almost all, and that, too, due to the ascending infection of the ureters and kidneys.

The operation dissects out the ureters individually, keeping a small circular patch of bladder wall around the vesical orifice of each. The rest of the bladder wall is ablated. Each ureter, with its button of bladder wall, is then drawn through a small slit in the rectal wall of its own side and left hanging from 1 cm. to 1.5 cm. into the rectal lumen.

This very general statement covers the fundamental idea of the operation, for the peritoneum has not been opened; but there are certain details of technic which seem debatable and I have sufficient assurance to wish to discuss them in the light of my one case.

The idea on which the operation of Maydl was based, namely, that there was a sphincteric action in the muscular layer of the bladder wall around the openings of the ureters, and that this required the conservation not only of this muscular fiber which surrounded each ureteral orifice, but also of those that surrounded both of them together, has to be abandoned; and with it may be given over the necessity for transplanting the whole of the trigone of the bladder into the colon or rectum, and making it practically a part of their wall. It is only necessary, therefore, to conserve such part of the bladder wall as surrounds each ureteral opening individually, and even this not with the idea that it contributes a sphincteric control of the opening, but merely with the idea that the wound of the mucous membrane is made at a reasonable distance from the mouth of the ureter and that the ureteral mucosa itself is left absolutely intact.

In the earlier operations which Peters himself did, he passed into each ureter a small catheter and fastened it there. Its presence in the ureter served as a guide which prevented the wounding of the ureter during the operation and afterward served as a means to conduct the urine out of the rectum during the first thirty-six to forty-eight hours following the operation. In one of Peters' patients an ascending infection occurred and the patient died, and Peters thought that the infection possibly was due to the fact that he had left the catheter in the ureter after the transplantation of the ureter into the rectum. This made me desire to avoid the use of the catheter at all, and as I began my operation I attempted to dissect out the ureter without the assistance of the catheter as a guide. I did this quite as much because of the infected state of the exposed vesical mucosa and the fear that in passing a catheter into the ureter I should carry up with it a certain amount of the infection. I found, however, that the dissection in the abnormal anatomic relations of the parts in these exstrophied cases was difficult, and I fortunately put into each ureter a small ureteral catheter to act as a guide, for had I not done so I should quite certainly have cut off the right ureter from ignorance of its anatomic location. In this one case of mine I found that the ureters approached the bladder from either side of the abdomen and passed transversely from the periphery of the exstrophied bladder toward their openings.

I believe that it will be wise for anyone who is undertaking this particular operation to put into each ureter before he dissects it out, a ureteral catheter. After the dissection has been completed, the catheter should be removed. It is no longer of service.

I departed from the Peters technic in that I did not retain the catheter in the ureter after the latter had been transplanted into the bladder. Instead of that I let the ureter begin to discharge urine into the rectum from the first and merely saw that its exit was arranged for by a tube in the anus. In the operation, as Peters has described it, dilatation of the sphincter ani was practiced so as to permit free exit for the urine. Of course, stretching the sphincter is a simple and common

* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

1. Peters, Brit. Med. Jour. 22, June 1901.

matter, and very rarely results in paralysis. It is quite possible, however, for a man to stretch the sphincter of a child more than he thinks he is doing, and as the end for which the stretching is done can be equally well attained by fastening a little rubber tube in the anus, it seems wise to me not to stretch this sphincter; and the plan has worked well, at least in this one case of mine. I can not well conceive how a man could be more mortified than to find, after he had made a successful transplantation of the ureters into the rectum, that he had no sphincter ani, and that all that he had accomplished by his operation had been to change the point of incontinence from the hypogastrium to the anal region.

In the operations which Peters has described, he packed the opening in the hypogastrium and let it gradually cicatrize. There seems to me to be a fairly good reason for this, for if there is any leakage from the rectum by the side of the ureter through the little opening which is made for the introduction of the ureter, the packing would act as a drain to the surface and so prevent a local and possibly general infection. Peters has not closed the openings in the rectal wall in any way. In my one operation I put in a single catgut stitch which brought the opening down to a size just sufficient to contain a ureter, and in the stitch I caught up a little of the periureteral areolar tissue which had been kept with the ureter to carry its blood vessels. This precluded the probability of any leakage from the rectum, and I should think it would be quite possible in some of these cases immediately to suture the recti together and so close, at once, the abdominal wall. In my own case I could not do this, for the child was very feeble and was already on the verge of shock when I had completed the transplantation, so that I followed Peters' plan and merely packed the abdominal wound. Later, after the general condition of the child had improved, it was a simple matter to go back and make a firm suture of this abdominal wound, it having in the meantime practically filled up with granulation tissue and nearly cicatrized over. In doing this I was surprised to find how easy it was, in this particular case, to draw the recti together, even though there was no os pubis on either side and no symphysis.

In the ablation of the vesical mucosa I was particularly careful to leave untouched the prostatic urethra which lay as an open saucer-shaped space in its usual location, and in it could be plainly seen the openings of the seminal ducts. From it extended, as a gutter, the open urethra. At a secondary operation I closed in the urethra from the meatus to the prostatic portion by the Duplay method, but I failed at first, to get union over the prostatic sinus. This has been accomplished, however, at later operations. This child, therefore, has a genital canal, normal up to his prostatic urethra, and from that point on to the meatus completed by an artificial closure of the urethra which should, in time, give him the opportunity of doing his duty toward the propagation of the species.

Reverting to the history of the convalescence of this child, it is only necessary to say that from the beginning his rectum acted perfectly well as a bladder, and would retain his urine from one to two hours. Later the period was increased to three or four hours, being only a little longer in the daytime than in the night. An examination of the urine which was voided, usually independently of any feces, though sometimes there were small fecal flecks in it, showed it to be acid, to have a cloud of albumin, and to have no sugar, but there were present triple phosphates, amorphous urates and bacteria. During the period of the child's residence in the hospital, he was given small doses of hexamethylenamin with the idea of preventing an ascending infection. Whether or not this was of use I can not say, but no ascending infection occurred up to the time of his leaving the hospital, and reports from his home state that he is in excellent health. At the time the child left the hospital, he was different from the ordinary child only in having a scar in the middle line of the lower part of his abdomen, representing a place which had formerly been occupied by the bladder. His penis was somewhat short, and a scar ran along its dorsum where satisfactory union of the integument had not occurred. His urethra extended from its proper opening on the tip of the glans backward to the prostatic portion. To urinate he had to sit down as if he was going to have a stool, and his urine came from his rectum. A finger in the rectum could feel, on either side, just above the internal sphincter, the little projections of the ureters which, each with its button of vesical mucosa, hung close to the rectal wall. It may not be an impossibility for him to go through life without any but the most intimate of friends knowing his differences from them.

Peters has reported four cases in the literature, and in March, 1905, he wrote me that he had operated in his fifth case. Katz of Braila, Roumania, reported, in 1903, nine operations transplanting the ureters individually into the rectum, and these include Peters' four cases. Of the other five operations, only one, that of Pye Smith, was by Peters' technic. The other operators, Pozzo, Capello and Colzi (two cases) transplanted the two ureters apparently by one opening on the anterior wall of the rectum; and each patient had a urinary fistula. Of these nine patients, only two have died of ascending infection: Peters' patient and Colzi's first patient, the former on the fourth day and the latter after seven months, Peters' fifth case case and my one bring the total up to eleven cases.

Peters' first operation was done in 1901, and the patient has now lived four years with his rectum doing duty as his bladder. It is not false reasoning, I maintain, to argue that as this boy has gone four years he may go eight years, and if he goes eight he may go sixteen; many a justifiable surgical procedure has a less secure foundation. The operative technic is simple and easily performed, and the operation should not prove a difficult task in the hands of anyone who has ordinary surgical ability. The condition for which it is proposed is one in the extreme, and I can not but think that a great deal has been given to us in this method. The Maydl operation had a mortality of about 33 per cent., the deaths being due to chloroform, hemorrhage, hydronephrosis, peritonitis and pyelitis. This particular operation has not been done often enough to warrant the calculation of percentages, but I do not see why the operation itself should entail any mortality, except, perhaps, in very weak and puny children. Septic peritonitis, which can not help being a fatal factor in the Maydl operation, whether the transplantation of the trigone be made into the rectum or into the colon, is here eliminated entirely. The only unavoidable danger is in the ascending infection, and there seems good reason to believe that this may be indefinitely postponed.

DISCUSSION.

DR. E. A. WELLS, Hartford, Conn., stated that he assisted Dr. Hartley[1] of New York in two operations similar to those of Dr. Sherman. The first patient was not operated on for

1. Med. News, Aug. 29, 1903.

exstrophy, but for chronic tuberculous cystitis; however, the principles of the operation are the same. Both patients were 18; one a girl, the other a boy. I say a boy, because his general non-development gave him that appearance. Dr. Hartley dissected out the trigone of the bladder in these cases, and freely opening the peritoneal cavity, inserted this into the sigmoid flexure of the great intestine. The abdominal wound was closed immediately. Both these patients did well. At last reports both could hold their urine a normal length of time and could void it at will and separately from the feces. The girl is married and has had a child. The boy has had several previous operations for his exstrophy, epispadias, etc., to no avail. Dr. Hartley did not use a ureteral catheter. If this is used, one should be very careful to avoid unnecessary traumatism about the ureteral orifice, as on the integrity of this bit of tissue depends in large measure the success of the operation. It is undoubtedly better to do the operation as Dr. Sherman suggests, namely, without opening the peritoneal cavity.

DR. L. L. MCARTHUR, Chicago, said that some experiments have been made by Dr. Peterson of Ann Arbor and Dr. Martin of Chicago, with a method of implanting the ureter into the rectal wall so as to militate against the backward regurgitation. They have been able to accomplish this by making an oblique implantation of the ureter into the rectum projecting a portion well into the lumen of the rectum, as done by Dr. Sherman, but in addition burying the portion outside of the rectum by infolding the rectal wall around the urethral wall for an inch. By these means they claim that as fecal masses pass they tend to milk, rather than to overcrowd infection into the ureter, thus materially lessening the danger of an ascending pyelitis. They seem to have added something to the technic.

DR. H. M. SHERMAN said that he thinks the operation referred to by Dr. Wells was the regular Maydl operation, and he does not think Dr. Hartley varied its technic. Dr. Dudley Tait of San Francisco and Dr. Sherman spent every Sunday morning for many Sundays trying to do the Maydl operation on dogs. They killed many dogs doing it, and every one died of peritonitis. This is the experience of everyone who has tried to transplant both ureters in dogs, and this difficulty impressed itself on them. The dog's bladder is entirely intraperitoneal, and it is impossible to open it without opening the peritoneum. Peter's operation consists in dissecting out each ureter individually with a button of vesical mucosa, and passing dressing forceps into the rectum and then through its wall with which to grasp the button of vesical mucosa. The transplantation of the ureters into the rectum is thus exceedingly simple and easy, and takes only a few minutes. It is all an extraperitoneal manipulation. The obliquity of the puncture in the rectal wall can not make much difference, for even if it was made oblique it would probably soon become direct. No account is taken of the fact that the feces pass over the opening of the ureter, as they seem to have done no harm. Ascending infection has not occurred in any patient except the one in whom Peters kept the catheter too long in the ureter. One point is important: one must avoid wounding the vesicle or ureteral mucosa. The difficult matter in Dr. Sherman's case was closing the urethra. It is a mistake to approach this operation with the expectation of finding this plastic work on the epispadias easy because of the fact that no urinary function is going on in the urethra. Compared with this the trasplantation of the ureter into the rectum is very simple.

DRUGS AND THE DIAZO REACTION.*

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It is not my purpose to enter here into a discussion of the extent of the value of the diazo reaction in clinical work. I take it for granted that physicians are all making use of the test for this reaction, and that like myself they have found it of much help, particularly in the diagnosis of typhoid fever.

During the past year, a statement from an Italian source appeared in the medical press of this country to the effect that certain drugs when ingested will cause the urine to react positively to the usual diazo test. An editorial in a leading medical journal seemed to take this statement for granted. This has induced me to institute some observations on this subject in the wards of the Davis Memorial Hospital, the details and results of which I herewith submit.

Observation 1.—A man aged 40, recovering from a compound fracture of the femur. All functions were normal; urine normal. To simulate the dietetic conditions of typhoid fever, he was placed, during the period of observation, on an exclusive milk diet preceded by an effective dose of castor oil. Three grains of thymol were administered every three hours for forty-eight hours, and the urine tested for the diazo reaction at the middle and at the end of this period. Result negative.

Observation 2.—A man, aged 19, recovering from a fracture of both femurs. General diet. All functions normal; urine normal. Five grains of salol were administered every four hours for a week and the urine was tested for the diazo reaction every twenty-four hours. Result negative.

Observation 3.—Patient of the last observation. All functions were normal; urine normal. After the salol was stopped, he was placed on guaiacol carbonate gr. 3 every three hours for forty-eight hours. Urine was tested for the diazo reaction at the end and at the middle of that period. Result negative.

Observation 4.—A woman, aged 39, recovering from an oöphorectomy. There was some intestinal fermentation, otherwise normal; urine normal. General diet. She was given 5 grains of sodium sulphocarbolate every three hours for three weeks. Urine was tested repeatedly for diazo reaction during that period. Result negative.

Observation 5.—A man, aged 55, recovering from a simple fracture of the femur. All functions were normal; urine normal. Exclusive milk diet. Five grains of salol were given every four hours for 48 hours. Urine was tested for the diazo reaction at the end and at the middle of that period. Result negative. The dose was then increased to 7 grains and continued for another 48 hours. At the end of this period the urine showed the characteristic dark color. Diazo reaction was absent.

Observation 6.—A woman, aged 39, recovering from an operation for hemorrhoids. All functions were normal; urine normal. Exclusive milk diet. Five grains of salol at intervals for forty-eight hours and the same drug in doses of 7 grains for 48 hours longer. Urine was tested for the diazo reaction at intervals of twenty-four hours. Result negative.

Observation 7.—A man, aged 35, recovering from a contusion of the thighs. All functions were normal; urine normal. General diet. Three grains of thymol were given every three hours for seventy-two hours. Urine was tested at the end of each twenty-four hours. Result negative.

It would seem, therefore, that while the observations are not large in number, as far as they go they most emphatically disprove the assertion that salol, thymol, sodium, sodium sulphocarbolate and guaiacol carbonate have the power of producing the diazo reaction in the urine of persons taking these drugs.

While working on this subject it occurred to me that it might prove of interest to the general practitioner to learn whether this reaction, when present in the urine, would continue to be present after the urine stood for some time with or without the addition of preservatives, as it so often happens that a physician is unable to test it for some time after it is voided. The following observations were made:

Observation 1.—Sixty c.c. of typhoid urine with a marked diazo reaction was allowed to stand in an open conical glass

* Read before the West Virginia State Medical Association, 1905, at Wheeling, W. Va.

for 48 hours in a temperature of about 70 degrees F. Marked decomposition was present at the end of that time. After filtrating the urine the diazo reaction was found present and as intensely marked as when it was fresh.

Observation 2.—To 60 c.c. of the same urine 2 c.c. of chloroform was added and allowed to stand for one week. The reaction was found unimpaired at the end of that period.

THE FAT OF TOP MILKS.

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The use of top milks in infant feeding is rapidly increasing, and we have thought it advisable to examine the typical milks of the Philadelphia milk market for their percentages of fat, particularly the milk sold with a certificate of quality issued under the authorization of the Philadelphia Pediatric Society.

The certified milks of Philadelphia are, Dr. J. P. Crozer Griffith informs us, four in number, as follows: The Willow Brook Farm, the Haddon Farm, the Wawa Dairy, and the Bryn Clovis Farm. Since this information was received, we have learned that the sale of certified milk by the Bryn Clovis Farm has been discontinued.

We have examined, also, the Walker-Gordon guaranteed milk, in one pint and one quart bottles, and the milk regularly sold by four representative milk dealers of this city.

The certified milks, we are told, are from milkings made about 4 p. m., bottled on the farm, and delivered to the consumer the following morning. They are then about 16 hours old. The regular milks we examined were sent in bulk to the city, and bottled on the evening before delivery, and were about 16 hours old when examined.

Of the three certified milks of Philadelphia, two are sold only in one-pint bottles, and the third is sold in both one-pint and one-quart bottles. This fact is important, because the formulas for milk modifications with top milks are all based on the use of top milks taken from one-quart bottles, and not from one-pint bottles: and our experiments show radical differences in the fat percentages of top milks as taken from each. The sizes of the bottles were:

	Height. Inches.	Outside diameter at base. Inches.	Inside diameter of neck. Inches.
Pints (certified)	8¼	2½	1¼
Pints (certified)	8⅛	2½	1¼
Pints (certified)	8	2⅜	1½
Pints (guaranteed)	7	2⅞	1⅜
Quarts (certified)	9⅞	3¾	1⅜
Quarts (guaranteed)	8⅜	3¾	1⅜
Quarts (regular)	8⅛	3¾	1¼
Quarts (regular)	9	3¾	1½
Quarts (regular)	9⅜	3¾	1¼
Quarts (regular)	8¾	3½	1⅜

The differences in sizes will be noted. While small, in some instances, the size and shape of containers exert an important influence in creaming, or the production of the top milks, more so than the difference would apparently indicate. The height of the layer of cream was from 2½ to 4 inches. As a rule, the less high the creamy layer the denser and richer in fat.

While the amount of cream is governed by the amount of fat in the milk, the shape and size of the container and the length of time the milk has stood are factors of equal or greater importance.

Creaming, that is gravity-creaming, is the separation or raising of the fat globules to the surface of milk. It is mechanical in action. The more narrow and cylindrical the container the readier the creaming and the more dense the upper layer; the broader the container the less ready the creaming and the less dense the upper layer. This is shown by the differences in the creams obtained from an open pan and from a tall cylindrical bottle.

The fat globules are suspended in the milk. It is generally believed that each globule is surrounded by a thin nitrogenous membrane, protoplasmic in origin, which becomes ruptured on churning. This theory is by no means universally held to-day. Babcock and many others believe that milk is simply a natural emulsion.

The length of time a milk has stood before the top layers are removed is a most important factor. We found that a one-half ounce of top milk, 16 hours old, assayed 17.6 per cent. fat, and 24 hours later another half-ounce of top milk from the same bottle assayed 26.4 per cent. (It should have assayed much less, as the richer layer had previously been removed). Similarly, a one-ounce sample was increased from 15.2 per cent. to 16.5 per cent, another one-half ounce sample from 19.8 per cent. to 32.4 per cent., and another one-ounce sample from 18.4 per cent. to 26.4 per cent.

In our determinations of fat, the Leffmann and Beam method,[1] devised in 1889, was used. This method gives rapid and exceedingly accurate results.

In the table given, references are made to the standards of Winters,[2] on which many of the formulas in general use are based.

Examination of these results reveals a number of interesting facts. The percentage of fat in whole milk varies greatly. Leach[3] reports such variations to be 180 per cent.

1. The richer the upper layers of top milks in fat the poorer the lower layers.

UPPER.	PINTS.				QUARTS.						AVERAGES.		
	Certified.			Guaranteed.	Certified.	Guaranteed.	Regular.						
	1	2	3	4	5	6	7	8	9	10	Pts.	Qts.	Winters' Standards.
½ oz.	27.60*	27.60*	23.00	17.60†	24.20	19.80	21.60	28.80	25.60	25.20	29.40	24.00	24.80
1 oz.	23.20	22.00	21.20	15.20	22.00	18.40	19.80	27.60	25.10	25.60	22.00	22.00	23.10
2 oz.	22.40	20.40	19.80	15.50	22.10	17.60	17.60	26.40	22.00	24.80	20.80	21.75	21.40
4 oz.	15.20	11.20	16.20	12.00	20.10	17.20	16.00	17.60	20.40	21.60	14.20	18.80	20.10
6 oz.	11.12	8.80	11.50	8.40	17.80	14.20	11.80	14.40	18.00	18.80	10.47	15.80	18.60
8 oz.	8.80	7.20	8.20	6.10	14.90	12.40	8.80	12.10	14.60	16.40	8.06	13.20	16.70
12 oz.	5.60	5.20	6.40	4.30	10.30	9.50	7.60	8.30	11.60	10.40	5.70	9.60	12.10
16 oz.	....	3.80	4.80	3.95	....	....	....	....	....	....	....	....	....
	4.78	4.10	4.80	3.95	8.10	6.30	6.80	6.10	6.20	8.40	4.40	7.00	9.40
32 oz.	....	....	....	....	4.60	3.50	3.75	3.70	4.20	5.35	....	....	....
	....	....	....	....	4.60	3.60	4.40	3.75	5.20	5.40	....	....	....

* The high percentages in these cases are probably due to the cylindrical shape of the bottle and the small inside diameter of the neck.

† The low percentage in this case is undoubtedly due to the shape of the bottle and probably also to the shorter time of creaming.

1. Leffmann and Beam's "Food Analysis," 1905, p. 203.
2. "Feeding in Early Infancy: Home Modification of Milk," by Joseph E. Winters, M.D., Professor of Diseases of Children, Cornell University Medical College, Medical Record, March 7, 1903, p. 366.
3. Food Analysis, 1904, p. 91.

2. The differences in the fat percentages of top milks in pint bottles and quart bottles are marked, especially in the lower layers. The variations in extreme limits from the minimum to the maximum were from 60 to 170 per cent. The maximum variation of the whole milks examined was nearly 50 per cent.

3. The quart bottles of the Philadelphia milks follow the Winters' standards for the upper one-half ounce, one ounce, two ounce and four ounce very closely. Above that the differences are wide.

4. The pint bottles of certified milks follow Winters' standards nearly for the upper one ounce and two ounce, but differ radically in all the rest. The one-pint bottles of milk should never be used instead of one-quart bottles for obtaining top milks for infant feeding, as the differences in fat percentage are too great.

In the Winters formulas for the modification of milk for infants of less than 1 month of age, one-half ounce of top milk from each of two quart bottles of milk is used in 11.5 ounces of food, and the fat percentages run about from 1.75 to 2.5 of fat, instead of 2 per cent. (Winters standard); where the upper half-ounce from each of three one-quart bottles is used in 14 ounces of food, the fat percentages are from 2 per cent. to 3 per cent., instead of 2.5 per cent. (Winters standard); where the upper 2¼-ounce from one-quart bottle are used in 14½ ounces of food, the fat percentages are practically 2.75 to 4 per cent., instead of 3 per cent. (Winters standard): where the upper six ounces from one-quart bottles are used in 28 ounces of food, the range is from 2.5 to 4 per cent., instead of 3.5 per cent. (Winters standard).

When larger quantities of top milk are used, say 8 ounces from a quart bottle in 32 ounces of food, the fat percentage will be from 2.2 to 4.1 per cent:; when 12 ounces are used in 32 ounces of food, the fat percentage will be from 2.85 to 4.35 per cent.; when 16 ounces are used in 32 ounces of food, the fat percentages will be from 3.05 to 4.2 per cent.

From this data it will be seen, at least so far as the Philadelphia milks are concerned, that the use of diluted top milks from one-quart bottles for the very young is not attended with such serious differences of fat percentage as the differences in the fat percentages of the undiluted top milks might imply or as to justify the disuse of top milks. At the same time the fact must be borne in mind that in cow's milk, probably, as in human milk, the ratio of fat to proteid is the highest at birth, and gradually decreases until the period of dentition is reached; for this reason the percentages of fat in cow's milk are most variable. It is well known that the most uniform milk is obtained by mixing the milk of a herd of cows rather than using the milk of a single cow. The same rule holds true with reference to the other constituents of milk, though not to the same extent.

The possibility of considerable variation in the percentages of sugar, fat and proteids in cow's milk, and consequently in top milks, should never be forgotten in the percentage feeding of infants. It is impossible to get absolutely exact percentages without analyzing each and every lot of milk used, and this is, of course, impracticable. As some one has wittily said: "The difficulty with those who seek scientifically exact percentage modifications of milk is that, with all their rules and tables, they fail to consider the party most deeply interested; that is, the cow." In obedience to physiologic laws, the cow makes her milk to suit the needs of her calf, and these needs are governed by the breed, age and individuality of the calf, and doubtless other factors.

Apparently the best results in top milk infant feeding are to be had by approximating percentages; that is, by having them reasonably accurate, and then adjusting, if necessary, the relative proportions of top milk and diluents to suit the individuality of the child.

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THE FREEZING POINTS OF BLOOD AND OF URINE IN PNEUMONIA.

WITH DESCRIPTION OF A NEW METHOD.*

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The object of this study[1] was to ascertain the freezing points of the blood and of the urine in pneumonia; to determine the relation of such findings to the course of the disease; and to note any possible bearing the same may give with regard to the prognosis of this disease. Before discussing the methods employed and the observations made in the cases studied, it will be well to mention briefly the work of other investigators who have used cryoscopy in their researches.

A BRIEF REVIEW OF CRYOSCOPY AS USED IN MEDICINE.

As early as 1871, De Coppet[2] showed that the freezing point of water is lowered a definite amount by the addition of a molecule or proportionate quantity by weight of any soluble substance. Little was done, however, following this finding until Raoult[3] studied the freezing points of various solutions and derived his important laws. Van t'Hoff[4] later proved that equal volumes of isotonic solutions contained the same number of molecules or fragments of molecules, and have the same freezing point. Then D'Arrhenius[5] modified these laws to comply with his own laws of solutions. No one, however, regarded cryoscopy from a medical standpoint until Koranyi,[6] regarded by all as the father of cryoscopy, published the wonderful results of his studies on the osmotic pressure of the various fluids of the human body. Since the appearance of his articles, many investigators have worked on the subject, adding little by little to his data. Roth[7] compared the electrical conductivity with the freezing point of urine, agreeing with the findings of Koranyi.[6] Lindemann[8] studied the concentration of the urine and of the blood in renal diseases, and their relation to uremia. Claude and Balthazard[9] followed the above with experiments on the freezing point of urine in various diseases. Senator,[10] Kummel,[11] and Hamburger[12] verified the works of previous investigators. Waldvogel[13] studied the freezing points of the blood and of the urine in typhoid fever.

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* From the Department of Pathology of the Northwestern University Medical School.

* Read in the Section on Pathology and Physiology of the American Medical Association, at the Fifty-Sixth Annual Session, July, 1905.

1. A preliminary report on this study was read before the Chicago Pathological Society, April 10, 1905.
2. De Coppet: Annales de Clinic. Phys., 1871-72, vols. xxiii, xxiv and xxvi.
3. Raoult: Comptes Rendus de l'Acad. des Sciences, Nov. 27, 1882.
4. Van t'Hoff: Memoires de l'Academie rotale des sciences de Due de Bandet, 21, No. 17, Stockholm, 1886.
5. D'Arrhenius: Zeitschr. f. Physikal. Chemie, vol. i, 1887.
6. Alex. v. Koranyi: Zeitschr. f. klin. Medicin, 1897, vol. xxxiii, pp. 1-54; 1898, vol. xxxiv, pp. 1-52.
7. Roth: Centralblatt f. Physiologie, 1897, p. 271.
8. Lindermann: Deutsch. Arch. f. Klin. Med., 1899, vol. lxv, p. 1.
9. Claude and Balthazard: Jour. de Physiol. et Pathol., vol. ii, 1900, pp. 766, 804, 831, 963. Presse Méd., Feb. 17, 1900, No. 14, p. 85.
10. Senator: Deutsch. med. Wochenschrift, 1900, vol. xxvi, p. 48.
12. Hamburger: Centralb. f. Innere Med., vol. xxi, 1900, p. 297.
13. Waldvogel: Deutsch. Med. Wochenschrift, 1900, p. 685, 735. Archiv f. Exper. Path. u. Pharmakologie, vol. xlvi, 1901, p. 41.

but his results were found inconstant by Rumpel.[14] According to Ogston[15] the findings in hepatic diseases are similar to those found by Koranyi in disturbances of the kidneys. Landau[16] compared the freezing points of venous and arterial bloods, finding that stagnant and venous blood have a freezing point one or two hundredths of a degree centigrade lower than arterial blood. Sollmann[17] wrote extensively on the concentration of the urine as an aid to diagnosis. Tinker[18] studied cryoscopy as an index to renal insufficiency in surgical diseases of the kidney. The latest important use of the cryoscope was brought out by Lobenstein[19] in his work on the molecular concentration of blood and of urine in pregnancy, puerperium and eclampsia.

PREVIOUS CRYOSCOPIC FINDINGS IN PNEUMONIA.

Contrasted with the large amount of work done with the cryoscope on renal diseases, very little has been attempted in pneumonia. Koranyi[6] made the most important contributions. His results are briefly as will follow. He determined that the freezing point of the blood is higher, i. e., above 0.56 degrees C. in anemias and those fevers which do not interfere with the respiration. Chlorosis, tuberculosis, and the various cachexias are included under this head. Further, the freezing point of the blood is lower than 0.56 degrees C. in all diseases which are accompanied by deficient respiration or kidney function, or both. The essential difference between the quality of the blood and of the urine in cases with lessened aëration and that in renal insufficiency, is that in the former the low freezing points are raised by the administration of acids. Where both kidney and lung functions are deficient, as in heart cases, the great concentration of the blood can be decreased by the exhibition of acids, but can not be brought to normal. The freezing point of the blood may be essential in diagnosis between typhoid and pneumonia, for, if the freezing point is lower than 0.56 degrees C., the case is very likely pneumonia. On the other hand, should it be higher than 0.56 degrees C., typhoid fever is more probable. In pneumonia the blood change can be corrected by administration of acids. In regard to the urine, the freezing point in anemias is above 1.4 degrees C. With recovery the freezing point is lower. In increased kidney circulation the increase in salt excretion is greater than that of other molecules; therefore, the quotient in such cases of the freezing point of urine divided by NaCl per cent. secreted is low. In slowed circulation the salt secretion is decreased more than the other molecules. Hence the freezing point of urine divided by NaCl per cent. rises in value. If, in fevers, the freezing point of urine divided by NaCl per cent. is lower than 1.7, malaria is indicated. If this quotient is greater than 1.7, malaria is contraindicated.

Lindemann[8] found that the concentration of the blood increases if the excessive substances are not eliminated from the blood, even though there is no absorption by the tissues of the body. Sollmann[17] notes that the height of a fever has no special influence on the urine, and that the same results are found when a healthy person is on a milk diet. He found that in heart diseases, pneumonia, ascites, etc., with cardiac weakening, the freezing point of the urine is lowered. Claude and Balthazard[6] found that the volume of urine excreted in pneumonia is decreased during the disease up to the crisis, when it rapidly increases. The freezing point, however, is markedly lower, due to the increased concentration of the urine. The lowering is due, however, to the great increase in elaborated molecules excreted, and not to the chlorids, the latter having diminished. Three days after the defervescence of the fever, the reverse conditions are present, that is, the amount of urine is increased, the freezing point becomes normal, while the chlorid secretion increases at the expense of the non-chlorid molecules.

METHODS EMPLOYED.

A. *To Determine the Freezing Point of Urine.*—This is done usually by a Beckmann apparatus or one of its modifications. A thermometer, capable of being read to 0.01 degrees C. is supported by a rubber stopper in a large test tube, A, and should be at least 5 millimeters distant from the walls of the test tube. The thermometer should be graduated from 1 degree centigrade above, to 4 or 5 degrees below the freezing point. A stirring rod, preferably one of platinum, should pass through the cork holding the thermometer, and in a spiral around the latter. This test tube should be fitted by means of a rubber stopper into a larger test tube, B, which in turn is supported in a jar containing the freezing mixture, the temperature of which should be at least —5 degrees C. An air space is thus left between the freezing mixture and the solution to be frozen, insuring gradual cooling. The thermometer should be tested daily in a 1 per cent. solution of sodium chlorid, the freezing point of which is known.

To determine the freezing point of a solution, 10 cubic centimeters of it are placed into test tube A, and the apparatus set up as outlined above. The fluid to be tested should always be cooled down near the freezing point before beginning the experiment, and constant stirring is necessary. The mercury sinks at first considerably below the freezing point, and then, as freezing occurs, heat is given off and the mercury rises again to the solidifying temperature, which result is tabulated when the column of mercury has remained stationary some thirty seconds. It is safest to remove tube A after the first result, allowing the ice of the tested liquid to melt, and then retest. These two results should agree to 0.004 degrees C., although .02 degrees C. is sufficiently accurate, ordinarily.

The method described above is simple, easy, and rapid. The determination does not take more than ten minutes after the apparatus has been set up and standardized. The necessity of testing the thermometer daily is rather annoying. More simple instruments with fixed freezing points have been suggested for this purpose. These are not quite as delicate, but are sufficiently accurate for clinical work on urine.

When the urine contains considerable urates these are thrown out of solution by the cooling, so that the observed concentration is lessened by the amount of these precipitated salts. This quantity is, however, so small that it may be safely neglected; in fact, it is not easily possible to make any correction. It would not do to dilute the urine, since this alters the dissociation.

B. *To Determine the Freezing Point of Blood.*—Hav-

14. Rumpel: Munchener med. Wochenschrift, vol. xlviii, 1901, p. 223.
15. Ogston: Lancet, 1901, vol. ii, p. 1252.
11. Kummel: Munchener med. Wochenschrift, Oct. 30, 1900, p. 1525.
16. Landau: Deut. Archiv. f. klin. Med., vol. lxxviii, Nos. 5 and 6, 1903, p. 458.
17. Sollmann: Amer. Medicine, vol. iv, No. 17, 1902, p. 656.
18. Tinker: Johns Hopkins Hosp. Bulletin, vol. xiv, No. 147, 1903, p. 162.
19. Lobenstein: Am. Med., vol. viii, No. 16, p. 685.

ing decided that it would be impracticable to get 10 cubic centimeters of blood daily from pneumonia patients, the method of Koeppe[20] for determining the osmotic pressure of the blood by means of the hematocrit was used as modified by Richard Sommer[21] to calculate the freezing point of the blood. His explanation of the method follows:

General Principles: The determination is made according to the laws of Van t'Hoff.

(*a*) The osmotic pressure of the blood corpuscles is the same as that of the plasma, because a plasmolysis or a plasmoptysis takes place.

(*b*) If the blood corpuscles are brought into solutions of different osmotic pressures they change their volume in a definite manner until the osmotic pressure of the blood corpuscles is the same as the solution in which they are placed.

(*c*) The osmotic pressure is proportional to the concentration of the solution.

(*d*) The lowering of the freezing point of a solution is proportional to the concentration of the solution (law of Blagden).

(*e*) The lowering of the freezing point of a solution is proportional to the osmotic pressure of the same (law of Van t'Hoff).

(*f*) A solution which holds in solution a grammolecule to the liter has an osmotic pressure of twenty-two and thirty-seven hundredths approximately (Van t'Hoff).

Apparatus: (1) Graduated hematocrit tubes which differ from the ordinary in that the tube is enlarged proximally into a little bulb. The tube is graduated into hundredths. The readings are taken with a hand lens, with which one can with accuracy estimate one-quarter of one of the graduations. The lumen of the tube is so small that one drop of blood is enough to fill this tube several times.

(2) Electric centrifuge, which must revolve very evenly and rapidly.

(3) An instrument to get blood from, preferably, the ear. The regular precautions are taken as in all blood work.

(4) A number of clean watch glasses to receive standard solutions. Care must be taken not to allow solutions to come in contact with other soluble substances.

(5) A hand lens to read the graduation on the tube.

(6) A Beckmann freezing apparatus for determining the freezing points of the standard solutions.

(7) Sterile cedar oil is used in order to prevent the blood from being mixed with foreign substances which may hasten coagulation of the blood.

(8) Standard solutions of certain chemicals which do not act on the blood corpuscles when in solution. The experimenter decides the one he shall use. The substances that are employed commonly are cane sugar, sodium chlorid, potassium bichromate and potassium oxalate. Eijkmann uses sodium chlorid; Koeppe, cane sugar, and Sommers, potassium bichromate. The cane sugar method is the best for the accurate worker, but the solutions are hard to keep. It is understood that the materials must be chemically pure. Each one of these solutions has advantages and disadvantages. For potassium bichromate it can be said that it does not coagulate the blood nor destroy the corpuscles. Since the coagulation of the blood is harmful to the experiment, it is best for the beginner to use this salt. The solutions last long when sealed. A weak solution containing twenty grams to the liter and a strong solution with fifty grams to the liter are used. The freezing point of each is obtained and marked on the flask.

Procedure (according to Koeppe):[20] In a clean hematocrit tube a little cedar oil and immediately after a little blood are aspirated. The tube is immediately closed without reading the graduation and centrifuged. When the centrifuging is completed, there will be three definite lines to read off, namely: Blood corpuscles as the lowest part, plasma as a middle part, and the cedar oil on top. The quantity of blood taken, then, in the first place will be the sum of blood cells and plasma. Tubes used in this manner are named, according to Koeppe, "oil pipettes." Such a method is employed when one does not wish to mix the blood with the other solutions. When one dilutes the blood with some of the above-mentioned diluents, the unoiled, clean, dry tubes are used, and the operation is as follows: Blood is drawn into one of the tubes, with the condition that it is not to be drawn above the hundredth mark; the tip of the tube is then wiped, and the quantity read off accurately. Then the point of the tube is immersed in one of the standard solutions in the watch glasses, and a quantity of the latter is very slowly sucked up. There should be six or ten times as much of the solution as there is blood. The more of the diluting fluid employed the more accurate the results will be. Then the tube with the mixture is well shaken and centrifuged until two or three successive readings correspond. Ordinarily it takes about three minutes to centrifuge sufficiently. The readings are then placed into a table similar to the following, and the deductions found later:

	n = volume of blood taken	m = volume of blood corpus.	$\frac{100\,m}{n}$ = per cent. blood corpus.
1. "Oil Pipette."	....	....	....
2. Blood diluted with weak solution ...	....	....	....
3. Blood diluted with strong solution..	....	....	....

To have a check on one's results, two or three such tests should be made in each case. (Koeppe filled eight or nine of these tubes in ten minutes, ready for the centrifuge.) Then all the tubes are centrifuged at one time, and the various tests on the same case should be alike. The volume per cent. is then figured out from the results according to the formula, 100 m divided by n, in which m is the volume of blood corpuscles and n the volume of the blood taken.

Calculation of the Lowering of the Freezing Point from These Results (Sommer): Following are tabulated results, taken, as an example, when potassium bichromate solutions, with a freezing point of —0.335° C. for the weak and —0.81° C. for the strong solutions are used:

	n.	m.	$\frac{100\,m}{n}$
1	52	26	50 per cent.
2	69	39	56.52 per cent.
3	66	27	40.91 per cent.

In the mixture with the weak fluid, the blood corpuscle per cent. is 56.52, while with a strong solution it is 40.9 per cent. The dissimilarity between the freezing points of the two solutions is .455 C., and this corresponds to a difference of 15.61 per cent. in the volumes of blood corpuscles in Experiments 2 and 3. Therefore, 1 per cent. of this variation is equivalent to 0.029148° C. of the diversity of the freezing points of the two diluting fluids. Since the difference between the volume of the blood corpuscles with the weak solution and the

20. Koeppe: Phys. Chemie. in der Medizin, Wien, 1900.
21. Sommer, R.: Written communications.
22. Beckman: Zeitschr. f. Phys. Chemie, vol. viii, p. 323.

undiluted blood is 6.52 per cent., the variation in the freezing points between these samples of blood will be 6.52 times —0.029148° C. = —0.190° C. We must add this difference to the solidifying point of the weak solution, i e., we must add —0.190 to 0.355 = 0.545° C., which is, therefore, the freezing point of the undiluted blood. In order to bring these results into a formula, we will use the following symbols commonly employed in cryoscopy:

d = Freezing point of the blood.
d_1 = Lowering of the freezing point of the weak solution.
d_2 = Lowering of the freezing point of the strong solution.
v = Per cent. of volume of the blood corpuscles in undiluted tube.
v_1 = Per cent. volume of the blood corpuscles when the blood is mixed with the weak solution.
v_2 = Per cent. of volume when it is diluted with the strong solution.

Therefore $d = d_1 + \frac{(d_2 - d_1)\ (v_1 - v)}{(v_1 - v_2)}$

In the illustration above:
d_1 = 0.355° C.
d_2 = 0.81° C.
v = 50 per cent.
v_1 = 56.52 per cent.
v_2 = 40.91 per cent., and
d = —0.545° C.

Precautions: 1. In using the Beckmann[22] apparatus for urine, the usual well-known precautions should be observed.

2. The ordinary precautions of asepsis used in all blood examinations should be adhered to.

3. In drawing up the blood into the tube, care should be taken not to permit it to pass beyond the hundredth mark, for accurate reading would then be impossible. If this accident occurs, the tube must be laid aside and another taken.

4. The diluting solution should be drawn in immediately after the blood and thoroughly shaken before placing the same into the hematocrit arm.

5. At least five minutes must elapse between mixing and sedimenting, to allow for full osmosis. Ten minutes is safe at the other extreme.

6. Since it is impossible to obtain accurately the same amount of blood each time, the per cent. volume should be figured in decimals to four places.

7. Before using the tubes they should be thoroughly cleansed, rinsed with water, then with potassium hydrate, and this followed successively by water, alcohol and ether and finally dried over a flame. In order to dissolve the blood corpuscles after centrifuging, a weak acetic acid solution may be used, followed by the above routine.

8. The freezing points of the standard solutions must be frequently taken to insure uniform results.

9. The point of the hematocrit tubes should be wiped dry before clamping, and the rubber washers should fit tightly to the ends of the tubes when clamped.

OBSERVATIONS ON TWENTY-FOUR CASES OF PNEUMONIA.

Before beginning the determination of the freezing points of the blood and of the urine of pneumonic patients, experiments were made on ten normal males between the ages of 20 and 40. These results were looked on as controls.

	Freezing point of blood.	Urine.
Case 1....	—.567 degrees C.	—1.53 degrees C.
Case 2....	—.566 degrees C.	—1.88 degrees C.
Case 3....	—.533 degrees C.	—1.77 degrees C.
Case 4....	—.544 degrees C.	—2.34 degrees C.
Case 5....	—.554 degrees C.	—2.16 degrees C.
Case 6....	—.558 degrees C.	—1.93 degrees C.
Case 7....	—.569 degrees C.	—2.06 degrees C.
Case 8....	—.55 degrees C.	—1.94 degrees C.
Case 9....	...557 degrees C.	—1.73 degrees C.
Case 10....	—.554 degrees C.	—1.16 degrees C.

(Twenty-four-hour specimens of urine were obtained throughout these experiments.)

From this it will be seen that the freezing point of the blood in these cases ranged from —0.533° C. to —0.569° C., average —0.552° C., while that of the urine ranged from —1.16° C to —2.34° C., average —1.8° C.

In comparing the results recorded in using the hematocrit method described above with those found when using the method employing the Beckmann apparatus, it was found that the freezing point of the blood, according to the latter method, was slightly higher than that obtained by the former. The difference is, no doubt, due to the accuracy of the former in carrying out the decimals to five places in all cases.

Appended are the tabulated results of twenty-four cases of pneumonia, taken under observation. These patients were watched daily. The freezing point of the blood and of the urine, the quantity of urine, the specific gravity of the urine and the amount of urea were recorded. Note was made of the casts and albumin when present.

CASE 1.— S. S., ward 22; No. 74. Male, 32 years old. Right upper and middle lobes consolidated. Milk diet; stimulating treatment only. The course of the disease was moderate.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.60		Delirious.			102.6	102	32
2....	—.5976		Delirious			102.4	98	28
3....	—.585	—2.73	850	1023	3.1	100	100	28
4....	—.594	—2.64	890	1022	3	100	108	24
5....	—.602	—2.67	830	1023	2.9	102	100	28
7....	—.594	—2.57	1020	1021	2.9	100.2	92	28
8....	—.5617	—2.15	1200	1019	2.3	100.4	100	28
9....	—.563	—1.93	1130	1019	2.3	100.4	98	28
12....	—.547	—1.80	1400	1016	1.9	99	84	20

This patient was seen about five days after admission to the hospital. No chill had been noted. The course of the disease was moderate without complication. The temperature receded by lysis. The freezing point of the blood was lower than normal throughout the course of the disease. The freezing point of the blood rose as the temperature fell, not reaching normal until several days after the temperature. The urine followed the same course.

CASE 2.—Y. F., Ward 22, No. 72. Male, 35 years old. Right lower and middle lobes involved. Milk diet; stimulating treatment. The course of the disease was moderate.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.574	....	....	....	..	103	108	36
2....	—.60	—2.36	1020	1019	2.8	103	120	40
3....	—.5897	—2.58	970	1021	2.9	102.6	120	44
4....	—.5976	—2.96	860	1023	3.1	101.8	126	48
5....	—.593	—.287	1300	1021	2.9	99	96	48
7....	—.588	—2.59	1250	1019	2.7	100	88	28
8....	—.563	—2.03	1230	1018	2.4	99.6	92	32
9....	—.557	—1.79	1200	1018	2.2	...	Normal.	..
10....	—.553	—1.77	1330	1019	2	...	Normal.	..
14....	—.559	—1.59	1450	1017	1.7	...	Normal.	..

This patient was seen the second day after admission, about five days after the chill. His temperature was not very high. The freezing point of the blood and of the urine were moderately lower throughout the disease, rising slightly above the normal after the crisis, then receding to normal.

CASE 3.—K. H., Ward 24, No. 3. Male, 32 years old. Upper right lobe involved. Milk diet; stimulating treatment. Moderately severe course.

Day.	Blood Freezing.	Urine Freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.627		Delirious.			102.8	110	34
2....	—.603		Delirious.			103	104	32
3....	—.594		Delirious.			102.8	120	34
4....	—.602		Delirious.			97.9	96	30
5....	—.583		Delirious.			98.8	102	28
7....	—.577	—2.98	1050	1022	2.7	98.4	92	24
8....	—.547	—1.51	1230	1018	2	99	88	24
9....	—.548	—1.63	1420	1019	2	Normal.	Normal.	..

This patient was seen the second day after admission. The freezing point of the blood was considerably lower. The patient was delirious throughout until after the crisis, after which the freezing point of the blood rose to normal within a few days, as did also that of the urine. No specimen of urine could be obtained until after the crisis, but when ob-

tained, the freezing point was considerably lower than it was after convalescence.

CASE 4.—W. H., Ward 22, No. 34. Male, 27 years old. Right upper and middle lobes consolidated. Milk diet; stimulating treatment. Mild course.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.564	....	....	....	..	103	112	40
2....	—.587	—2.21	850	1020	2.6	100	100	44
3....	—.5628	—1.98	920	1019	2.5	102	100	36
4....	—.574	—2.37	890	1021	2.9	97.2	90	36
5....	—.585	—2.09	980	1019	2.6	98.6	84	28
7....	—.542	—1.76	1150	1018	2.3	98.6	72	24
8....	—.54	—1.71	1080	1018	2.1	Normal.	...	20
9....	—.542	—1.82	1200	1017	2.3	Normal.	...	..
10....	—.541	—1.76	1490	1018	2.2	Normal.	...	..
13....	—.557	....	....	....	..	Normal.	...	..

A very mild case, seen five days after he had the chill. The freezing point of the blood was only slightly lower throughout, coming up to normal, as in the preceding cases.

CASE 5.—F. F., Ward 24, No. 40. Male, 24 years old. No definite area of consolidation. Milk diet; stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.585	....	....	....	..	103	104	34
2....	—.57	—1.95	1020	1019	2.8	102	100	32
3....	—.563	—2.49	900	1021	2.9	100	90	30
4....	—.558	—2.37	920	1020	2.7	98.2	96	28
5....	—.552	—2.01	1030	1018	2.4	98.4	94	24
7....	—.533	—1.47	1270	1018	2	98.6	82	22
8....	—.536	—1.65	1150	1019	2	Normal.	Normal.	..
9....	—.541	—1.73	1090	1018	2.2	Normal.	Normal.	..
12....	—.55	—1.75	1200	1017	2	Normal.	Normal.	..

This patient was seen the day after admission. The course of the disease was typical, although no definite area of consolidation was found. The temperature fell by crisis the fourth day after coming under observation. The freezing points of the blood and of the urine were lower, but not markedly so.

CASE 6.—C. J., Ward 10, No. 8. Male, 37 years old. Upper and middle lobes involved. Light diet; stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.594	....	....	....	..	103.2	104	52
2....	—.584	—3.06	750	1025	3.2	101.2	112	36
3....	—.582	—2.93	890	1023	2.9	100.6	112	32
4....	—.585	—2.87	850	1023	2.9	98.6	104	28
5....	—.582	—2.75	970	1020	2.5	98.4	98	26
6....	—.562	—2.24	1250	1017	2.4	99.6	92	30
8....	—.558	—1.79	1170	1018	2.2	99	96	26
9....	—.557	—1.93	1200	1018	2.3	Normal.	..Normal	
13....	—.562	....	....	....	..	Normal.	..Normal	

This patient had a high temperature, but no definite areas of consolidation were noted. The freezing points of the blood and of the urine were somewhat lower than normal, following the same course as in the foregoing cases.

CASE 7.—W. A., Ward 24, No. 73. Male, 29 years old. Both lower lobes consolidated. Milk diet; stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.589	....	....	....	..	102.4	100	30
2....	—.596		Delirious.			104	98	40
4....	—.611		Delirious.			103.2	120	42
5....	—.609		Delirious.			103.4	114	36
6....	—.617	—3.25	1100	1015	2.9	102	116	36
7....	—.591	—3.19	1200	1015	3	100	110	28
8....	—.593	—3.18	1250	1016	3	98	84	28
9....	—.559	—2.49	1560	1012	2.4	98.8	94	26
11....	—.541	—1.86	1400	1014	2	Normal.	Normal.	..
15....	—.563	....	....	....	..	Normal.	Normal.	..

(Casts and albumin.)

A typical case of pneumonia, with extensive involvement of both lower lobes of the lungs. The patient was seen early in the course of the disease. The freezing point of the blood gradually fell to reach its lowest point before the crisis, when, as the temperature descended, the freezing point of the blood rose to normal.

CASE 8.—K. G., Ward 24, No. 1. Male, 27 years old. No definite area of consolidation. Milk diet; stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.573	....	....	....	..	102.6	104	32
2....	—.599	....	....	....	..	102.4	102	30
3....	—.593	—3.06	1020	1023	2.8	101.6	94	30
4....	—.594	—3.07	890	1023	2.9	102.4	110	32
6....	—.589	—3.01	850	1024	3	98	94	24
7....	—.561	—3.00	1000	1019	2.7	98.6	88	22
8....	—.555	—2.37	1350	1015	2	98.8	84	20
9....	—.548	—1.99	1700	1016	2	98.4	80	22
10....	—.551	—1.75	1500	1015	1.8	98.6	82	20
11....	—.56	—1.87	1400	1016	2	Normal.	Normal.	..

This case, although not so severe as Case 7, followed the same course and gave the same results.

CASE 9.—N. A., Ward 24, No. 4. Male, aged 19. Right upper lobe extensively involved. Milk diet; stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.587	....	....	....	..	104	116	30
2....	—.589		Delirious.			103.2	110	38
3....	—.591		Delirious.			104.4	124	32
5....	—.594		Delirious.			99.2	80	30
6....	—.558	—2.08	700	1021	2.7	99	60	26
7....	—.562	—1.87	900	1020	2.4	99.2	66	28
8....	—.554	—1.83	1050	1018	2.2	Normal.	Normal.	..
9....	—.543	—1.92	1020	1019	2.3	Normal.	Normal.	..
10....	—.541	—2.01	1160	1021	2.5	Normal.	Normal.	..
13....	—.552	....	....	....	..	Normal.	Normal.	..

A very severe case of short duration. The freezing point of the blood and of the urine followed the same course as in the other cases.

CASE 10.—L. J., Ward 24, No. 38. Male, 18 years old. No definite area of consolidation. Milk diet; stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.602	....	....	....	..	104.8	112	30
2....	—.569	—1.93	950	1022	2.6	104	120	28
3....	—.5827	—2.23	850	1023	2.7	104.2	120	40
5....	—.538	—1.23	1200	1017	2	99	94	30
6....	—.549	..1.39	1100	1017	2	99.2	80	28
7....	—.543	—1.55	1060	1018	2	98.9	80	24
8....	—.547	—1.69	1080	1018	2	Normal.	Normal.	..
9....	—.546	—1.71	1440	1018	2.3	Normal.	Normal.	..
10....	—.549	—1.67	2100	1017	2	Normal.	Normal.	..
11....	—.558	....	....	....	..	Normal.	Normal.	..

This patient had a high temperature, but no definite areas of consolidation were noted. The freezing points of the blood and of the urine were somewhat lower than normal, following the same course as in former instances.

CASE 11.—E. J., Ward 24, No. 79. Male, 47 years old. Lower left lobe consolidated; also had pleurisy on left side.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.611	....	....	....	..	104	132	36
2....	—.607		Delirious.			102.4	115	28
3....	—.623	....	....	....	..	102.8	106	28
4....	—.613	—3.59	870	1024	3.1	98.8	82	22
5....	—.617	—3.59	720	1028	3.4	99.4	90	20
6....	—.587	—3.19	820	1018	3.1	98.6	90	20
7....	—.549	—2.05	1250	1014	2.6	98.6	80	24
11....	—.555	—1.96	1400	1015	2	Normal.	Normal.	..

A very severe case; high temperature and rapid respiration. The freezing point of the blood was considerably lower, as was also that of the urine. The same general course was present, however, as in preceding cases, relative to the lowering of the freezing points of the blood and of the urine.

CASE 12.—M. A., Ward 22, No. 38. Male, 30 years old. No definite area of consolidation. Milk diet; stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.593	....	....	....	..	103.4	120	48
2....	—.597	—3.11	680	1029	2.9	98	96	32
3....	—.591	—3.15	820	1026	2.8	98	86	30
4....	—.576	—2.97	1230	1021	2.4	98.8	70	22
5....	—.525	—1.75	1400	1017	2	98.8	72	22
6....	—.545	....	....	....	..	Normal.	Normal.	..
9....	—.546	....	....	....	..	Normal.	Normal.	..

This patient came into the hospital late in the course of the disease, the crisis occurring on the same day. The same findings obtained as in the other cases.

CASE 13.—K. J., Ward 22, No. 28. Male, 46 years old. Right lower lobe consolidated. Stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.591	....	....	....	..	102.4	112	40
2....	—.587	—2.805	820	1021	2.5	101.8	104	36
3....	—.593	—2.96	760	1022	2.8	97.6	100	32
4....	—.591	—3.05	930	1026	2.9	99.6	88	32
5....	—.555	—3.02	1230	1021	2.3	99.4	98	28
7....	—.541	—2.47	1450	1015	2	99	100	30
10....	—.542	....	....	....	..	98.8	96	22

(Anemic and weak.)

This patient was seen the day after admission to the hospital. The freezing points of the blood and of the urine were low. It was noted that immediately after the crisis both were lower than during the disease.

CASE 14.—D. J., Ward 24, No. 39. Male, 42 years old. Right lower and middle lobes. Stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.599	....	....	....	..	103.2	100	36
2....	—6.05		Delirious.			104.4	110	44
3....	5.94	—2.14	950	1021	2.7	102.4	90	34
4....	—.583	—2.10	1020	1021	2.8	101	98	30
5....	—.556	—1.78	1300	1017	2.4	99.4	90	26
6....	—.55	—1.60	1500	1015	2	98.6	86	24
7....	—.556	—1.70	1650	1014	2	98.4	80	26
12....	—.557	....	....	....	..	...	...	..

A severe case, the patient being delirious during the first two or three days. The freezing point of the blood was low. The patient made an uneventful recovery. Freezing points of the blood and urine came to normal, as in preceding cases.

CASE 15.—D. M., Ward 24, No. 32. Male, 33 years old. Right lower lobe involved; continuous salt irrigation. Stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.583	....	....	....	..	100.2	100	36
2....	—.587	....	....	....	..	101.8	100	28
4....	—.585	—2.25	920	1015	2.6	99.8	84	26
5....	—.571	—2.15	1020	1017	2.7	99.6	88	30
6....	—.555	—1.85	1300	1014	2.2	99.2	76	24
10....	—.560	—1.80	1700	1015	2	98.6	78	22

A mild case. The same course and findings existed as in former cases. This patient also made an uneventful recovery.

CASE 16.—H. C. H., Ward 22, No. 68. Male, 42 years old. Right upper lobe consolidated. Evidences of tuberculosis. Milk diet; stimulating treatment. Anemic.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.603	....	...	....	..	102	120	34
2....	—.604	—2.47	900	1018	2.8	103.2	100	36
3....	—.618	—2.13	950	1019	3.1	100.2	98	36
4....	—.59	—2.39	600	1020	3.2	99.8	90	36
5....	—.60	—2.53	250	1019	3	100	84	28
7....	—.554	—2.11	870	1018	2.8	100	88	28
8....	—.532	—2.02	750	1019	2.6	100.5	90	28
9....	—.533	—1.97	830	1020	2.5	100.2	92	28
12....	—.535	....	...	....	..	99.6	86	26

Another typical case of pneumonia. The freezing point of the blood was low, as was that of the urine, following the same course as the preceding, but it is to be noted that evidences of tuberculosis were found, and therefore the higher freezing point of the blood during convalescence (Koranyi[6]).

CASE 17.—V. B., Ward 24, No. 36. Male, 27 years old. Right lower lobe consolidated. Evidences of tuberculosis. Milk diet; stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.589	—2.93	750	1023	2.7	102	88	32
3....	—.593	—2.97	720	1024	2.8	102.6	102	28
4....	—.591	—2.87	800	1023	2.8	100	96	28
5....	—.616	—3.03	690	1025	2.9	100.6	95	24
6....	—.607	—3.14	870	1029	3.2	102	96	28
7....	—.608	—3.02	1020	1021	3.1	100	80	26
8....	—.572	—2.61	970	1019	3	99	97	24
10....	—.53	—2.47	1200	1015	2.6	99.2	88	28
13....	—.534	....	....	....	..	99.6	92	26

This patient was seen a day after admission with a typical pneumonia history. The freezing points of the blood and of the urine were low. They gradually descended until the temperature began to fall, when they gradually rose to normal. It will again be noted that this patient had evidences of tuberculosis, which will account for the rather high freezing point of the blood after crisis and during convalescence.

CASE 18.—B. Z. V., Ward 10, No. 22. Male, 45 years old. Right lower lobe consolidated. Chill several days before admission.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.593	....	....	....	..	104.2	124	30
2....	—.619	—3.29	530	1032	3.3	103.5	132	30
3....	—.601	—3.24	720	1028	3.2	99.2	96	28
4....	—.587	—2.51	1120	1019	2.6	98.8	80	24
5....	—.593	—2.60	1050	1021	2.8	103.8	140	44
7....	—.644	—2.91	870	1023	2.9	103.2	132	38
8....	—.689		Delirious.			103.2	128	40
9....	—.838		Delirious.			104.6	148	48

This patient was seen the day after entrance into the hospital, with the right lower lobe consolidated, high temperature and high pulse. The freezing points of the blood and of the urine were low. On the third day the patient had a crisis and the freezing point of the blood and of the urine began to approach normal. Two days later the patient had a relapse, with high temperature, high pulse, and rapid respiration. Physical examination now showed an extensive consolidation of the right lung, anteriorly and posteriorly from above down to the lower border of the scapula. The patient became considerably worse and delirious. On the seventh day the freezing point of the blood was very low. The patient was cyanotic and oxygen had to be administered. The patient died the night of the ninth day. The freezing point of the blood preceding his death was —0.838; temperature, pulse and respiration were very high.

CASE 19.—A. G., Ward 10, No. 25. Male, 50 years old. Upper left lobe extensively consolidated. Milk diet; stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.573	....	...	....	..	103	112	48
2....	—.592	—2.87	700	1023	3.1	102.2	96	36
3....	—.603	—3.17	560	1027	3.5	102.8	86	48
4....	—.813	—3.21	430	1032	3.6	102.8	120	46
5....	—.834	....	...	....	..	102.8	140	48
6....		Patient died.				103.6	138	52

The last blood for estimation was taken an hour before death—oxygen was administered for last twenty-four hours following venesection, withdrawing 500 c.c. blood and injecting 850 c.c. normal salt. In this case it was noted that on the fourth day the patient was very cyanotic, and since the pulse was slow a venesection was performed, withdrawing 500 cubic centimeters of blood. Eight hundred and fifty cubic centimeters of salt solution were then injected. It will be noted that this did not alter the results of the freezing of the blood, the same descending nevertheless. Oxygen was administered during the last twenty-four hours. Patient died of heart failure. The freezing point of the blood before death was remarkably low.

CASE 20.—J. O., Ward 22, No. 9. Male, 44 years old. Left and right upper lobes involved. Milk diet; stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.579	....	...	....	..	102	120	40
2....	—.694	—2.27	890	1023	2.7	103.2	124	44
3....	—.835	—2.31	850	1023	2.8	104.6	136	48
		(Patient died next morning.)						

While not so severe on entering, the freezing point of the blood was not very low, but it gradually descended so that on the day before his death it was very low.

CASE 21.—Ward 24, No. 65. Male, colored, 35 years old. Right lower lobe consolidated. Milk diet; stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.588	....	No specimen.		....	102	120	38
2....	—.687		Delirious.			102.6	108	52
3....	—.811		Delirious			103.2	120	48

Became suddenly worse and died. Case very similar to the preceding.

CASE 22.—P. C., Ward 10, No. 3. Male, colored, 30 years old. Lower left lobe consolidated. Venesection and injection of salt solution 500 c.c. and 600 c.c. on entrance. Stimulating treatment. Syphilitic history:

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.615		No specimen.			103.6	148	36
2....	—.62	....	...	....	..	102	132	42
3....	—.73	—1.13	500	1012	1.5	104.5	70	50

Another fatal case, very severe, and brief in its course. The patient died on the third day after admission. The freezing point of the blood became very low before death. The patient died of heart failure.

CASE 23.—M. J., Ward 10, No. 6. Male, 29 years old. Lower left lobe involved. Spread to upper lobe and right lower lobe third day.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.591	....	...	....	..	101.8	106	28
2....	—.607	—2.95	830	1026	2.8	102.4	122	32
3....	—.608	—3.03	880	1026	2.9	103.4	120	30
4....	—.715	—3.10	720	1030	3.2	103	124	44
5....	—.837		Delirious.			104.3	140	56

Patient died from exhaustion and heart failure. Oxygen was administered before death. Died the night after last record given. A very severe course. Patient died on the fifth day, showing same findings as preceding fatal cases.

CASE 24.—O. C., Ward 24, No. 78. Male, 49 years old. Right lower and middle lobes consolidated. Normal salt per rectum every four hours. Milk diet; stimulating treatment.

Day.	Blood freezing.	Urine freezing.	Am't.	Sp. gr.	Urea.	Temp.	Pulse.	Resp.
1....	—.611	....	...	....	..	102.4	136	32
2....	—.623	Involuntaries.	....	....	..	105.3	140	40
3....	—.702	—3.25	720	1031	3.4	103.8	120	36
5....	—.728	—3.24	350	1030	3.2	106	144	42

(Patient was delirious. Died 3 a. m. next morning.)

This was a very severe case. The patient died on the fifth day after admission to the hospital. It will be noted that the freezing points of the blood and urine in this case were low, the freezing point of the blood being lowest before death. The patient died of heart failure.

The chlorids in the urine were also estimated in the above experiments. The following method (approximate) was used:

Urine, 5 c.c.
HNO_3, 10 gtts.
$AgNo_3$ 10 per cent. sol., 2 c.c.
} Shake, and note amount of precipitate.

The chlorids were found markedly diminished in amount up to the crisis, when they rapidly increased to above normal quantity, to recede later during convalescence.

In reviewing and summarizing the above data, it is to be noted that all the patients were males between the ages of 18 and 50, and were apparently healthy before taken sick with pneumonia. This excludes, therefore, differences which might be peculiar to the disease as manifested in children and old age. All the patients were on essentially the same diet: Milk, and later broths and plenty of water. As to the treatment, only regular stimulating treatment was given, consisting of strychnia, whisky or digitalis. A few mentioned had salt irrigations. I believe that, in view of the results tabulated above, the following conclusions will be considered logical and proper:

CONCLUSIONS AS TO BLOOD.

1. There is an absolute lowering of the freezing point of blood in pneumonia.

2. The freezing point lowering of the blood depends in some way either on the extent of consolidation of the lung or on the height of the temperature, or both.

3. The lowering of the freezing point of the blood is greater than would be accounted for by the increased venosity of the blood, due to deficient aëration in the lungs.

4. The concentration of the blood increases, as shown by the lowered freezing point, as the disease progresses up to the time of crisis. Some time is necessary for the elimination of the excessive accumulation of products in the blood. Hence, several days elapse before the freezing point of the blood rises again to normal.

5. In those cases where the heart weakens perceptibly, the freezing point of the blood becomes lower. In the fatal cases in which the heart gives out, the freezing point of the blood is extremely low.

6. The lowered freezing point of the blood is apparently not due to deficient kidney function, but may be due to the inability of the kidney to excrete the excessive products of metabolism.

CONCLUSIONS AS TO URINE.

1. The freezing point of urine in pneumonia is considerably lowered.

2. This lowering is greater than would be accounted for by a mere concentration of normal urine.

3. The chlorids excreted are constantly diminished, due to a decrease in amount taken in (Sollmann).

4. The freezing point of the urine times the number of cubic centimeters voided is increased.

5. The quantity of urine is decreased, whereas the freezing point is lower.

6. The lowering of the freezing point of the urine is not due to chlorids, but to metabolic molecules excreted.

7. The freezing point of the urine does not rise to normal until after that of the blood, that is, several days after the crisis.

8. The specific gravity of the urine is not an accurate index to the concentration of the urine.

9. The freezing point of the urine bears no constant relation to that of the blood normally, for in a case with a freezing point of blood at —0.54° C. the freezing point of the urine may normally be lower than in a case in which the freezing point of the blood is —0.57° C. or, *vice versa*.

I wish here to express my thanks and gratitude to Prof. F. R. Zeit for suggesting this problem and directing the work; to Dr. W. H. Buhlig for many valuable suggestions, and to the directors of the laboratory and internes of the Cook County Hospital for assisting me to find the material.

PLEURAL EFFUSIONS IN CHILDREN.*

C. F. WAHRER, M.D.
FORT MADISON, IOWA.

These affections are probably as old as the creation of man, as the conditions producing them must have obtained ever since man first became sick. Hence, I scarcely think that much that is new can be said on the subject; it is possible, however, that I may say something that will cause some one to search deeper than ever before, and thus enable him to save a life that otherwise would have been sacrificed. But the best motive I have in writing is to provoke some discussion that may throw more light on diagnosis or treatment that may prove of benefit to the practitioner and to the one mostly concerned, the patient.

These pleural effusions, though fairly easily diagnosed by the expert, are too frequently overlooked by the rank and file of the profession, and, secondly, often when diagnosed, are not treated with sufficient vigor, but allowed to drift on expectantly, when only radical measures should be employed and thus give the patient the best chance and the most certain promise of recovery. It may seem strange to some of you whose daily life in large cities is so full of scientific certainty that I should make such observations unless you come in contact, more than I am aware, with that large number of routine physicians who are willing to bear or, rather, let their patients bear what they, either through ignorance or shiftlessness, are not able or willing to take the trouble to help. But some of you are, as I have been, a teacher, and you certainly remember some of the material that came before you as students and who graduated in medicine from your classes, I am sure, with many misgivings on your part. The power to generalize, and from that foundation to specialize, is not given all people; the ability to intelligently make comparisons, as we do in diagnosis, is not easy alike to all, even when they have a large stock of facts on hand. Hence, I want to emphasize this fact that throughout this great country of ours many patients with pleural effusions, both old and young, especially the latter, go to their deaths with the disease unrecognized by the attendant. You know, if these are not properly treated, and it must be surgically, that the vast majority will prove fatal.

First, there is a widespread idea that all pleural effusions must arise from a preceding attack of pleurisy. A little reading in pathology and text-books on diseases and their etiology would soon remind us such is

* Read in the Section on Diseases of Children of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

not the case. Most cases in children, perhaps nine-tenths of them, have their origin in pneumonia—especially that form termed pleuropneumonia—yet many cases of effusion are secondary to Bright's disease, scarlet fever, rheumatism, amyloid disease, trauma, heart affections, typhoid fever, syphilis, affection of the spleen, articular inflammations, pertussis, osteomyelitis, appendicitis and others, not the least of which is tuberculosis. For reasons not supported by experience, it has been the routine of fashion to consider nearly all cases of pleural effusions of tuberculous origin, and, while it is not good practice to ignore tuberculosis as a factor in the etiology, yet there is no good reason to overemphasize it. There are many more of these tuberculous in adults than in children, in the ratio of 4 to 8 times as many. This is as it should be, as we find many more cases of tuberculosis in adults than we do in children, especially in early childhood. It is most reasonable to think of the reverse, namely, that consumptives may be liable to pleural effusions as well as other people.

There are many other errors not only in etiology and anatomy, but in the pathology, prognosis and treatment of these cases. For instance, we speak of the pleural cavity. Physiologically and anatomically it may be said there is no such cavity. Only when filled with pathologic products do we have such a cavity—when filled with serum, pus, chyle, blood or air. Then the layers of the pleura normally contiguous become separated and a cavity forms, filled with these products. These fluids usually first make their appearance in the costophrenic sinus, then extend laterally and upward. When pleural exudates are examined we find many pathologic micro-organisms in them, often defining the character of the origin of infection. Staphylococci, streptococci, pneumococci, tubercle bacilli, gonococci and others. I am firmly convinced that the presence of any of the pathologic micro-organisms in sufficient numbers may provoke enough irritation to produce a pleurisy with an accompanying effusion.

As far as anatomy of the parts involved is concerned, it will not be necessary to go into detail, for text-books on anatomy and diseases of children will furnish that information more fully than I can, but will only draw your attention to the fact that the anatomy of the respiratory apparatus differs from that of the adult in that the pleural sinuses are deeper in children; hence, in puncturing an effusion it may be well not to wound the diaphragm, which rises comparatively high in the child. Even the stomach or intestines might be wounded if one should forget these relations. The relations of the two sides must be kept in mind. The pleural sinus of the left side is deeper than on the right, owing, perhaps, to size and position of organs on right side. The liver, especially large in the child, pushes the right lung up. The right lung is also smaller or shorter than the left lung. So when aspirating it is well to use the posterior axillary line, as that would lead to the most central point of all effusions—and to use the sixth or seventh interspace on the left side and the fifth or fourth on the right side, of course, combining these anatomic relations with each individual case.

As diagnosis in some cases is difficult, all the more should we use care in not allowing a case to escape us undiagnosed. Ordinary percussion and auscultation carefully made, excluding pulmonary and respiratory affections, and when in doubt coupled with the use of an exploratory aspiration, will, in painstaking hands, usually lead to a correct diagnosis. Pleural sounds, especially in dry pleurisy and serofibrinous pleurisy, by auscultation, imitate the creaking of a compressed snow ball or fine creaking sole leather. The breathing is of the bronchial variety. Percussion yields dullness, but in some cases when the child lies down the effusion may settle to the lowest point and, surmounted by gas or viscera, may give resonance and thus deceive. Diagnostic signs in effusions are rather deceiving, because both percussion and auscultation sounds vary owing to position of the child and number of places of adhesions. Percussion usually reveals flatness; absence of râles, friction sounds and bronchial breathing are found on auscultation. We also notice cough, pain, diminished fremitus, intercostal bulging of affected side, intense dyspnea, paleness and anemia, decubitus on diseased side by preference, and when all these signs do not give a satisfactory diagnosis they may be supplemented, as before mentioned, by exploratory aspirations; even then the latter procedure in careless hands may prove unsatisfactory and appear negative when effusion is present. The needle may be too small and may become occluded with coagula, the precise position of the effusion may not be reached by not going far enough or too far, being placed too high or too low; the aspirating apparatus may be faulty; in short, when effusion is strongly suspected and exploration is at first negative many patient and careful trials should be instituted before failure is to be accepted. It is scarcely necessary to add that all such efforts must be carried out only under most pedantic care as to asepsis, and the old surgical maxim, *"Nil nocere,"* is here paramount.

The character of the effusion can by no means be diagnosed except by the exploratory method. It may be grossly stated as a matter of presumption that in children of 3 and under, the effusion is purulent. The difficulty of diagnosis is increased when an effusion is encapsulated, when it is a subphrenic abscess or when it is an empyema necessitatis, as the latter may be mistaken for superficial abscess, eroded or gangrenous rib or trauma or the outlet of some burrowing abscess, as, for instance, a perinephric or psoas abscess. But in cases of pleuropneumonia the effusion may be masked by the prominent symptomatology of the pneumonia, but this alone should put the attendant on his guard, especially if he have a case of retarded resolution, for an empyema may be mistaken for a case of delayed recovery in pneumonia. Many cases of empyema are often very insidious in onset and behavior, but if you will remember the proneness of children to develop effusion after respiratory diseases, after scarlatina, tuberculosis, pertussis, rheumatism, endocarditis, liver diseases, kidney affections and those of the spleen, especially when coupled with an increased leucocytosis, it is better to suspect empyema and act accordingly. Now, I do not imply that one should go to extremes and diagnose everything as effusions simply because we can not make it out a case of malaria or fits, but let us use caution and not be humiliated and fail in our diagnosis and lose a valuable, promising life that should by all means have been saved, for, while most undiagnosed cases will die *per contra*, nearly all properly treated cases recover in children, and that is my other chief contention in this paper, to which I will refer under treatment.

I wish to emphasize prognosis. This, especially in children, is good, but must materially depend on the treatment, the skill of the attendant and especially the

faithfulness with which a positive line of treatment is carried out. It also depends much on the primary disease that gave rise to the effusion and the length of time the patient has been afflicted. It is most unfavorable when the diagnosis has been delayed, where too much stress is placed on expectancy or, what amounts to about the same, medical treatment, when primary disease has seriously invaded or destroyed some of the principal organs, such as the kidney, lung, heart, endocardium or pericardium, in amyloid degeneration of the liver, also when operation is delayed too long. Prognosis is good when early diagnosis is made, when operated on early by proper method, when child's general condition is good, and causative disease has not made too serious inroads on the patient's constitution. But, to repeat, in general it may be stated the prognosis is better than in adults in proportion of two to three times as good. Of course, under 1 year of age the mortality is great, probably 50 per cent. of deaths; however, at that age the disease is rare. Also when the disease is bilateral, a rare condition. Some of my chief reasons for a better prognosis in children is that we have a more active metabolism, a smaller cavity, where in this case real, and not relative size, counts—a greater elasticity of chest wall so the cavity can more readily contract or collapse, a condition much to be desired. It may be well to pause here long enough to remind you that fully nine-tenths of all cases usually follow pneumonia, especially pleuropneumonia; the other one-tenth all the other causes previously mentioned.

I have already said enough to have committed myself to the treatment; that it must in the majority of cases be surgical. From the fact that over one-third of all cases of effusion are purulent, the treatment must be surgical; most of the others are serofibrinous and, while they often absorb under stimulation, poultices, heat and liniments and some other medical treatment, yet they would recover faster under incision, because the large fibrinous clots so frequently present can be mechanically removed instead of leaving them to tardy absorption and a possible prey to infection. The two chief surgical procedures are puncture and aspiration and incision with or without section of a rib or two. True enough, aspiration has cured some cases of effusion, both serous and purulent, yet why trust a doubtful method for one more certain? When we have a purely serous effusion, aspiration once performed, or once or twice repeated, will usually lead to a rapid recovery. The same is true when an incision is done for an empyema. It may be parenthetically stated that while children recover rapidly they also die very rapidly under operation if they succumb to it; so danger signals must be heeded. Aspiration may fail in such cases or it may delay the recovery; it may prolong the infection and thus endanger the recovery, and may also lay the foundation to a possible tuberculosis. As to accidents in operations, they are less liable than in adults.

Now, who should perform these operations? I claim that any physician who is competent to treat diseases at all should be able to aspirate a serous effusion or make an incision for an empyema in a child. Of course, it is self-evident that if a competent surgeon can be had it may be preferable to have him operate. In rare cases, and they are extremely rare, where an Estlænder operation is required or the more serious and extensive Schede procedure, the highest possible surgical skill is none too good.

I shall not worry you as to surgical methods, how to operate, the best methods of drainage and the other details; any modern text-book will supply this information if, indeed, any one is now present that may be in need of such. With a short report of two cases I will conclude.

CASE 1.—Girl, 3½ years old, had pneumonia, following measles; was supposed to be suffering from delayed resolution. I was called in consultation about the thirtieth day of disease; found child of naturally fleshy and buxom habit, very emaciated, pale, cadaverous appearance, increased leucocytosis, hectic cough, great dyspnea, left intercostal spaces bulging, heart displaced to right, and other symptoms classical. On inspection found just above left nipple in fourth interspace a red spot ⅝ inch in diameter, appearing like a common boil; I diagnosed an empyema necessitatis, proved by aspiration. I made an incision two inches long, beginning with the external lesion and extending toward the left. Fully 40 ounces of pus of a rich, creamy appearance was removed under cocain anesthesia, double rubber drain introduced and child made a complete, uneventful recovery. This fine little girl would have died under her first attendant, who still treated her for pneumonia and grippe in a very dilatory manner, not even administering supportive measures.

CASE 2.—Boy, 31 months old, had some respiratory disease diagnosed by his attendant as pleuro-pneumonia. On the thirty-first day of the disease the physician, a bright country practitioner, observed bulging on left side, heart displacement and other signs which he interpreted either pleural or cardiac effusion, not being certain which, and exploratory aspiration being denied him, he sent for me. Under cocain exploration was painlessly made, pus found at once and operation advised, which was done next day. This child was very thin, restless, cyanosed, pulse high, temperature 104.6, anxious expression of face and, as in other case, leucocytosis marked. Incision under local anesthesia was made in sixth interspace and between anterior and posterior axillary lines two and a half inches long. With each respiratory movement pus spurted out in streams. Child was held by father on lap, left arm raised high and placed around father's neck. After liberating about 50 ounces of pus patient got weak, I desisted further work, placed a double drain, dressed wound, bandaged and put child to bed. He also made a brilliant recovery, notwithstanding large quantities of pus were removed many times at subsequent dressings.

Both these children are now (one 4 years and the other 3 years since operation) in splendid health, whereas both would have helplessly perished without operation timely performed. True, cases of empyema necessitatis have spontaneously recovered, so have cases that ruptured into a bronchus, and pus expectorated, but it would be only proper to say of such that they got well in spite of poor treatment rather than that the attendant deserved any credit for their recovery.

In closing let me once more urge a thorough diagnosis in a painstaking, almost pedantic manner, with all clothing removed as well as bedding, leaving no means unused to confirm your findings. You may not believe me, but experience confirms me, too many auscultations are made with the unaided ear, too many percussions made through their clothes and poultices, and too many diagnoses arrived at by snap judgment processes and smart guesses.

It may not be amiss to remember that the microscope and blood counts may aid when we are in the dark, and that children having effusions usually die if badly treated, and almost always recover when treated correctly, fearlessly and courageously.

DISCUSSION.

DR. A. C. COTTON, Chicago, agrees with Holt that the apex beat should be located if possible in every case of suspected empyema, even when the needle shows pus. Left-sided effusion, if extensive, ought to displace the apex beat. Otherwise the source of pus may be a pulmonary abscess. Dr. Cot-

ton does not believe that Dr. Wahrer intended to convey the impression that he lost 50 per cent. of his cases. Some people's ears are built pretty well, and we have the authority of the Scriptures to let him who has ears to hear with his ears and not use the stethoscope.

DR. WILLIAM J. BUTLER, Chicago, is inclined to regard with great skepticism any diagnosis of effusion necessitating surgical interference when the dullness is obscured by slight change of the position of the patient.

DR. D. S. HARNSON, Cleveland, Ohio, believes that the diagnosis of pleural effusion can be made without the needle. Were he the child he should like that physician best who would make a careful examination and make the diagnosis without the needle because, simple as it is, it is both painful and unpleasant. A child with pleural effusion will nearly always lie on the back, and the man who carefully examines the back will nearly always make out these exudations very early.

DR. C. F. WAHRER stated that some of these patients go unrelieved and to their graves for want of proper diagnosis and treatment. In reply to Dr. Cotton's statement that 50 per cent. of cases is too great a mortality, he said that in children one year of age the mortality is great, and that the consensus of opinion of authors in this country and in Europe is that in about 50 per cent. of children under one year the mortality reaches 50 per cent. and over. The different sounds in auscultation and percussion vary as much as the number of authors speaking on them. Dr. Wahrer does not care about putting his ear on everybody's naked chest, and in some patients the intercostal space is so deep that his ear is not deep enough to place it in between. Those who depend on the unaided ear have not availed themselves of the best opportunities of making a diagnosis by the use of the stethoscope. In reference to Dr. Harnson's statement that he would prefer to have a diagnosis made without the needle, Dr. Wahrer said that there is no harm in inserting the needle into the chest if hands and instruments are pedantically clean. It is better to avail ourselves of all the diagnostic means rather than to let pity interfere with our best judgment.

THE MANAGEMENT OF TYPHOID FEVER IN CHILDREN.

A PLEA FOR ENTEROCLYSIS.*

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PHILADELPHIA.

In attempting to give a very brief outline of my methods of managing typhoid fever in children, it is well to preface my remarks by saying that I will confine myself strictly to those methods which my experience has found most satisfactory; it is hoped that by so doing I may invite a free discussion and thus gain some additional knowledge on this perennial subject.

To manage a case of typhoid fever in a child successfully, we must be sure of our diagnosis and fully understand the child. An early diagnosis is not an easy matter, because the disease is frequently ushered in under the guise of some acute disorder which greatly postpones a decision. Usually the child has been ill for six or seven days before the physician is called. At this time we may find a temperature ranging from 101 to 104 degrees. The symptoms may strongly suggest enteritis, meningitis, pneumonia or autointoxication. Indeed, it may be doubted whether we ever manage a case of typhoid as typhoid before the end of the first week. Generally at this period we will arrive at a correct diagnosis, and then only by the process of exclusion.

Typhoid in children may be accompanied by diarrhea or constipation; the latter seems to be as frequent as the former. The spleen is often chronically enlarged, especially in children with rickets. This is a strong factor, however, in the diagnosis. The same is true of the liver. Chronic appendicitis comes in for its share of the blurring of an early diagnosis in typhoid. The general symptoms very frequently do not agree with the temperature, pulse or the physiognomy of the patient. In no other serious disease do we have the patient seemingly so well, in spite of some single, serious symptom. By reason of this conflicting array of early symptoms we frequently encourage relapses.

The Widal test and the diazo reaction are of very little value prior to the beginning of the second week, at this time we have additional symptoms to confirm the diagnosis, thus reducing the value of the Widal test. Undoubtedly most cases of chronic fever in children are diagnosticated by the process of elimination, and not usually before the tenth day, the only exception being where we have an overwhelming toxemia with few complications. Many cases of typhoid fever brought under my notice had been previously treated for pneumonia, and many cases were classified as typhoid which were chronic food poisoning.

Regardless of our pathology, for the sake of clinical study, typhoid may be regarded as a general sepsis, and any treatment that will lessen the toxemia and shorten the leakage in the general circulation may be regarded as a step toward a specific treatment. As yet, however, we have no specific treatment for typhoid fever. It is very interesting to notice, in passing, how frequently specific medication gains recognition for a time, its limitations conceded, and then it is discarded and quickly forgotten. The same may be said of the Brandt system, while tepid bathing has universal application.

It has been my privilege to see a large number of very severe cases of typhoid fever in children ranging between the ages of 6 and 15 years, the most susceptible age as well as the age when tact and care are at a premium.

To me it seems that the two elements necessary to success in combating this troublesome and dangerous disease are to reduce the toxemia and supply food and fluid. The first step is quietude in a large, well-ventilated room with calomel, which has not lost its reputation as an intestinal antiseptic, and a daily colon irrigation. The emphasis of the whole treatment I wish to place on the manipulation of the colon washing; this I order daily unless some grave counter indication obtrudes itself. Enteroclysis will reduce toxemia and necessarily the temperature, and at the same time supplies much needed fluid to the body. If this is carefully performed, it will be acceptable to the child and greatly shorten the period of illness. The temperature of the colon irrigation is always governed by the temperature of the child's body. All text-books give the technic of enteroclysis, yet I fear that the nurses fail to gain the desired results from this mode of treatment, because the attending physician does not impart specific instructions. Frequently I assist the nurse in the first treatment, thus allowing me to discover any abnormalities of the bowel, if any should exist, as I recognize its limitations as a therapeutic agent, and this must be done before valuable time is lost or any mischief occurs. If nurse and physician have gained the confidence of their little patient, the work will be performed pleasantly and profitably.

It must be remembered that the intestinal tract is the seat of many troubles and dangers during a course of fever. Tympanites may be troublesome by reason of some previous enteritis or peritoneal irritation; this is

* Read in the Section on Diseases of Children of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

usually combated by colon to relieve this tympany. I frequently substitute bicarbonate of soda for the saline solution, or I may add tincture of asafetida or some aromatic infusion, such as chamomile or a small quantity of turpentine, if tympanites and pain are troublesome. If peristalsis is increased by the intestinal washing, I reduce their frequency; or, if necessary, throw into the bowel one or two ounces of starch or bismuth emulsion. If hemorrhage should occur, I use the cold enema and apply the ice externally in serious hemorrhage; ice suppository may be indicated as well as the ice bag externally. If the heart is weak, I use a small quantity of whisky in the clyster.

I depend on the ice bag to the head and the hot water bag to the feet, as a routine, with a tepid sponge night and morning. Ice bag to heart, if fever is high. Throughout the illness observe a careful toilet of the nose and mouth. Change of position every two hours will serve to prevent pneumonia. Ice bag to the head need not be watched, except to see that it is not empty, but ice bag to the chest or back should not remain too long on one spot for fear of producing congestion of the kidney. I have found that children will submit more gracefully to the enteroclysis and the use of the ice and hot water bags than to frequent bathing, and on this account I have practically abandoned sponging every two hours if temperature reaches 102.2 degrees, which seems to be the classical treatment.

Diet, throughout the whole course of the fever, I have reduced to peptonized milk and albumin water. Whole milk is out of the question, even with children 15 years of age. As Jacobi says, "It is food for children in health, but food for bacteria in fever."

Even peptonized milk is better appropriated if taken with some charged water. I alternate the milk with the albumin water; the use of lemon and orange water is of inestimable value. If any drug is indicated—and I never give any except to meet a decided want—I administer it in a large glass of water. Last year I compared six cases with and without the free exhibition of water. In the six cases in which I forced a full glass of water with frequent intervals, the temperature reached the normal on an average two days earlier than in the series of patients who were allowed to drink the minimum quantity, thus demonstrating the value of fluid as an eliminator.

Retention in a recumbent position and on liquid diet I have found should continue for ten days after normal temperature has been reached.

In conclusion, let me say that I have no original thought to advance, but simply desire to emphasize the value of enteroclysis in typhoid and to insist on a careful technic of the same by the attending physician. Success in surgery is attained by thorough technic in the respective fields, and if we as physicians are to gain any exactness in our treatment we must carefully eliminate the unnecessary routine and centralize and magnify those means which we have found essential and necessary.

DISCUSSION.

DR. JOHN C. COOK, Chicago, emphasized the value of water in the treatment of typhoid fever. The value of washing out the toxins is unquestioned, and the water treatment in general has been proved to be valuable. When antitoxin was first introduced and was gaining ground, Baginsky was asked if it were advisable to use it in all cases. His answer was to use a remedy when it was fashionable, that it cured them. There is probably nothing that has marked the different periods of the medical era as much as our views on therapy. Everyone who has used enteroclysis as a routine treatment has undoubtedly found it valuable. In Dr. Hollopeter's experience in hopitals his nurses are trained, but in private practice where nurses are not at hand the details of this treatment should be gone into. Enteroclysis is a valuable remedy, as is calomel, but the best results will not be obtained from it unless detailed directions are given for its employment. The ice bag Dr. Cook considers a valuable remedy, but in private practice the physician can not tell those in attendance to leave the bag on the head indefinitely without some reference to the temperature.

DR. KATE LINDSAY, Boulder, Colo., said that the ice bag can be used very well in private practice if the physician applies warm fomentations for three to five minutes after the ice bag has been on for an hour or two and then gives a brisk rubbing. The ice bag can then be reapplied. This will quiet the nervous system and makes the treatment pleasant to the child. The ice bag can be applied safely by those who are very inexperienced if the details are attended to and the circulation kept up. A pleasant effect will be gained by the intermittent use of short, warm applications, and the effect of the ice bag can be prolonged by this combination of heat and cold.

DR. A. C. COTTON, Chicago, thinks that physicians are too apt to trust details to the nurse. Many nurses supposed to have been thoroughly trained fail to recognize all the anatomic requirements. When a nurse introduces a thermometer or the nozzle of an irrigator into the rectum with the baby in the dorsal position, she is taking the chances of causing traumatism of the posterior wall of the rectum. The probabilities are that the nurse will have the child lying on its back. In irrigation of the rectum there are many opportunities for traumatizing the mucosa. Of course, the physician knows that the axis of the rectal outlet forms an angle of 40 degrees with the long axis of the body, and that no rigid instrument can be introduced into the rectum from the front with a patient in the dorsal position without forming a right angle with the posterior wall of the rectum. It is easy, therefore, to see how rectal ulcers may develop. Dr. Cotton believes in this care of the child in typhoid fever especially; since frequent invasion of the rectum may have to be kept up for perhaps three weeks, it is an essential point that the nurse be instructed to turn the child over on the side, introducing the tube at an angle of 40 degrees.

DR. JOHN LOVETT MORSE, Boston, said that in judging of the results of the treatment of typhoid fever in children it must always be remembered that the tendency of this disease in childhood is to recovery. He cautioned against forming too favorable an opinion of the results of treatment by large amounts of water internally. He does not think that the published results from this form of treatment will bear close investigation and feels sure that when others begin to try the treatment they will not obtain the same results. It should be remembered that in typhoid the vasomotor system is relaxed and that on this account care must be observed in putting large amounts of water into the relaxed vessels, and thus dilating them more and bringing further strain on the heart. In a recent case of scarlet fever treated in this way, so much water was given that dilatation of the stomach resulted, and several months were required for the recovery of the patient. Dr. Morse does not believe it is necessary to keep patients with typhoid fever on so restricted a diet as is usually done. He feels that a diet composed entirely of milk is not the best food. There is no food, in any way reasonable, which will give such a large residue as milk. A caloric value much greater than from milk can be obtained by giving diluted cream. Better than proteids and albuminoids in the diet is some form of starch sugar.

DR. W. C. HOLLOPETER said that Dr. Cotton's statement relative to the danger of injury to the bowel seemed rather misleading. Dr. Hollopeter allows the tube to be inserted just beyond the external sphincter when the water is turned on; by this method the water forms a cushion which slowly dilates the bowel, and the tube following causes no injury. It would be a rude method indeed to push the tube into the bowel without first distending it. He emphasizes this point because nurses are prone to employ this valuable therapeutic

measure in a slovenly manner. Dr. Hollopeter referred to Dr. Lindsay's remark about the warm application, and said that he believes we can reduce temperature as well with warm water as with cold. He never uses cold unless there is a very high temperature. In answer to a question, he said that before a physician gets a patient with typhoid fever he has his mind made up to use enteroclysis.

THE EXTRACTION OF UNCOMPLICATED IMMATURE SENILE CATARACT.*

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In a discussion of this subject it is appropriate to say that a cataract is designated as senile if the patient has reached the fiftieth year of age; uncomplicated, when not associated with any special disease; and immature, when the opacity does not extend throughout the entire lens substance.

While this designation is in accord with the generally accepted teaching of to-day, technically we probably are not warranted in associating cataract with senility in the sense that the opacity of the lens occurring after middle life is a symptom of senility; or in designating a cataract as uncomplicated simply because we fail to detect the co-existence of any other intraocular pathologic condition.

Numerous observers have asserted that there are good grounds for considering eyes in which cataract develops as otherwise diseased. Thus Becker[1] states that, strictly speaking, there is no such thing as a primary cataract, the expression "primary" simply hiding our ignorance. Foerster[2] evidently recognized the influence of a previous or general disease when he said, "If a cloudiness of the lens is just beginning, very severe bodily ailment may hasten the development of cloudiness," to which Stricker[3] adds, "The constitutional disease manifests itself in its action on the lens in such a manner that it either first causes disease of other portions of the eye, thereby leading to a pathologic changed vitreous, which, in its turn, leads to a disease of the lens and cataract formation, or the lymph of the entire organism becomes changed, thus leading to cataract formation without any other disease of the eye having previously existed." Risley,[4] in calling attention to the importance of choroidal disease as a factor in the production of opacity of the crystalline lens, makes the statement that "while opacity of the lens is a disease of advanced life, it does not in all probability depend on senile change, but is originated in local pathologic states involving the nutrition of the eye itself." It is probable, however, that functional decline of the tissues of the body, which mark the onset of senility, may, by lowering the resisting power of the tissues of the eye, be responsible for the development of pathologic conditions which disturb the normal sclerosing process in the lens and lead to opacity. We may have premature, as well as delayed senility, but that does not account for the cataracts which occur in persons just past middle age who may be prematurely in decline, nor does it explain why persons of great age in whom the signs of senility are exceptionally pronounced, and who have remarkably good vision, are exempt from cataractous change of the lens. It is reasonable to presume, therefore, that cataractous change in the lens is either secondary to some disease, either local in the eye, or to some general disease of the entire organism, and that senility may or may not be a factor in the production of the pathologic state on which the development of the cataract depends.

The existence of marked choroidal and vitreous changes accompanying incipient cataract we are all familiar with, as such cases are frequently presented to us before decided clouding of the lens makes a satisfactory ophthalmoscopic view of the fundus impossible, and at a time when the vision is more impaired by the choroidal and vitreous changes than by the loss of transparency in the lens. But there is a class of cases in which a mild choroidal inflammation precedes the development of cataractous change in the lens, which may be undiagnosed unless the ophthalmoscopic examination is made early in the progress of the case, which frequently is not possible because the opportunity for such examination is not offered, or may be overlooked later, when the patient presents himself on account of failing vision from incipient cataract, unless the history of the case is carefully considered and unusual care is exercised in making the ophthalmoscopic examination with a fully dilated pupil. The fact that we do not find diseases of the eye ground after the extraction of the cataract does not indicate that such diseases did not exist in mild form at the beginning of the cataractous process, and subsequently disappeared as a result of the enforced rest of the eye occasioned by the clouded lens. From the fact that I have been able to detect these mild pathologic changes in the fundus frequently during the stage of incipiency of cataract, I am inclined to believe, as Risley has pointed out, that diseases of the eye ground are the rule rather than the exception in cataract patients.

With a recognition of the diseased processes which constitute the principal factor in the causation of cataract we may hope, by applying the proper treatment at the proper time, to prevent the occurrence of cataract in a fairly large percentage of persons who present themselves to the ophthalmologist before cataractous change in the lens has set in, or at a time when the beginning cloudiness of the lens is so slight as to make its arrest entirely possible. In those cases in which the process of cataract formation has become well established I do not believe it is possible to cause a retrogression, and it is those cases, when unaccompanied by diseased processes which would contraindicate operative procedures, with which this paper deals.

But the very fact that many, and perhaps the majority, of immature cataracts are accompanied by at least a mild disturbance in the uveal tract is sufficient ground for hesitation in attempting extraction, even in the absence of other contraindications, for the reason that enforced rest occasioned by the increasing opacity of the lens is a measure required to produce a subsidence of the uveal disturbance, and the beneficial effects of which would be more or less destroyed by extraction of the protecting lens. As the existence of those mild vitreous and choroidal inflammatory or degenerative changes must necessarily alter the prognosis in extraction of immature cataract, it is of the utmost importance that the history of such cases be given careful consideration and the functional examination of the eye be carried out with utmost care. In many cases, again to quote Risley,[5] to whom we are indebted for extensive study of this subject, a long history of asthenopia, pre-

* Read in the Section on Ophthalmology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

1. Pathologie und Therapie des Linsen Systems, 1877.
2. Graefe-Samisch, vii.
3. The Crystalline Lens System, 1899.
4. University Medical Magazine, March, 1889.
5. THE JOURNAL A. M. A., Dec. 7, 1901.

ceding the failure of vision from incipient and immature cataract, a more or less discolored iris, sluggish in its action to light and shade, and to mydriatics, injected conjunctiva and swollen caruncles, associated with headache, furnish a group of symptoms which point to the existence of choroidal disease." These processes do not, in a large proportion of cases, present the gross ophthalmoscopic appearances which characterize the rapidly destructive diseases in which marked retino-choroidal inflammation, fluid and muddy vitreous, and floating opacities are conspicuous features, but they are attended by a characteristic group of objective symptoms which, if not demanding treatment, certainly demand the enforced rest secured by the gradual opacification of the lens. But in those slowly progressing cases in which the clouded lenses, even though semi-transparent, have practically incapacitated the individual for the ordinary pursuits of life, and in which the enforced rest of the eye ground for a greater or less period has resulted in quieting the objective symptoms present with the beginning of the cataractous process, the advisability of extraction becomes a question worthy of attention.

In considering the operative features of these cases of cloudiness of the lens in those persons beyond middle age it is essential that we differentiate the immature cataract from the loss of transparency, accompanied by impairment of vision, due to advanced sclerosis. The one is a diseased process, due to an interference with the normal sclerosing process and accompanying alteration in the transparency of the lens (Becker), whereas the other is purely a physiologic process due to a lessening of the transparency on account of the hardening of the lens and consequent greater absorption of light. In the immature cataract, particularly those occurring in persons under 50 years of age, there will generally be found a soft cortex, adding to the difficulties of extraction, whereas in the sclerosed lens the cortex will be found hard, thus making it possible to extract the lens in its entirety.

Until recent years it was the generally accepted teaching that immature cataracts were not favorable for extraction, owing to the difficulties encountered in the removal of soft cortical material, and in consequence nearly all operators followed the practice of waiting until maturity, or until the lens was entirely opaque, before attempting extraction. That policy is still followed by many experienced and competent operators, though not a few attempt, and with a considerable degree of success, to hasten the time when extraction may be performed by practicing artificial ripening of the cataract by one method or another.

Schweigger,[6] in a paper published in 1890, was one of the first to advocate the extraction of unripe cataracts, and has asserted that he does not believe that it is necessary to cause an artificial ripening after the time when physiologic changes in the lens have done away with the act of accommodation; that is, toward the fifties and surely after the sixtieth year. He operates "all patients past the fiftieth year as soon as the senile cataract interferes greatly with the patient's vision, so that life ceases to be a pleasure to him, and he becomes unable to be self-sustaining, and the doctor may hope that by removal of the lens vision may be materially improved. It is immaterial whether a greater or less portion of the lens is still clear." This teaching of Schweigger, while not generally accepted and followed, has had the tendency to give many operators confidence in their ability to secure satisfactory results from the extraction of unripe cataracts, and as a result the practice is growing more and more in favor, with its attending benefits to that large class of unfortunate persons suffering from immature cataracts who otherwise would be compelled to go without useful vision for months and perhaps years while waiting for the cataract to become "ripe," and thus best suited to extraction. (Since writing this paper, Professor Hirschberg informs me that he advocated, prior to the publication of Schweigger's paper, the extraction of immature cataract, and his views on this subject, expressed before the Berlin Medical Society, were published prior to the appearance of Schweigger's paper in 1890.)

The principal objection to the extraction of immature cataract has been that, in the attempt to remove a lens not entirely opaque, more or less of the cortex remains which adheres to the capsule and is difficult, if not impossible, to remove without subjecting the eye to trauma which later gives rise to inflammatory reaction and jeopardizes the function of the eye, and if allowed to remain will either produce secondary cataract, with attending impairment of vision, or inflammatory reaction, with danger of damage to the function of the eye, or both.

Concerning the age at which the lens is sufficiently sclerosed to permit of its complete removal from the capsule, Schweigger[6] makes the following statement: "At sixty years of age the lens is hardened in its entirety, whether cataractous or not, and whether the cataract is complete or not. The cataract and the induration are phenomena absolutely different; the one is pathologic, the other physiologic. Thus, in persons of 60 years who have lost the faculty of accommodation, a cataract even incompletely developed may be removed without the opacities being reproduced, for it is certain that the lens can be removed entirely." To this statement I think we may take exceptions. Under the fiftieth year, or while there is still some accommodation present, the cortex of the lens still consists of a tenacious sticky mass, but I have frequently observed a soft tenacious cortex after the sixtieth year, and occasionally after the seventieth year, in lenses that were the seat of immature cataractous formation. While sclerosis may have progressed to that point where in some cases at sixty years, as Schweigger says, the lens may be easily extracted in its entirety, whether cataractous or not, generally speaking we are not warranted in assuming such a conclusion for every case, and the extraction of any unripe cataract carries with it the possibility of having to contend with soft cortical substance, with the chances of a lessened amount or none with increasing age of the patient.

With a reasonable certainty that an unripe cataract, except in a person of advanced age, is accompanied by more or less soft cortex, the advisability of attempting extraction becomes a question for serious consideration. In making a decision several factors must be taken into consideration. First, what is the state of vision in the fellow eye; second, how rapidly is the cataract progressing; third, how seriously inconvenienced will the patient be if he waits for maturity; and, fourth, what contraindications are there to the extraction of the cataract, even though immature.

Those ophthalmologists who possess an unduly ambitious desire to operate on the slightest provocation, and who favor extraction of immature cataract, may advise operation, no matter if the fellow eye has ap-

6. Extraction of Unripe Cataract, Berliner med. Gesselschaft, 1890. Hirschberg's Centralblatt.

proximately perfect vision; but such advice is not good and should not be accepted. No extraction of an unripe cataract is warranted when the fellow eye has vision sufficient for the patient's needs, unless the first discernible signs of beginning cataract in the fellow eye warrants the belief that the increasing opacity will soon seriously interfere with vision and it is thought that extraction of the more pronounced cataractous lens will restore good sight before the failing vision in the fellow eye has had time to reach a stage where it will seriously inconvenience the patient. Even in such instances the needs of the patient, so far as earning a living is concerned, the general physical condition, the state of the eye as concerns irritation or swollen lens, and the progress of the opacity must all be taken into account before arriving at a final decision to operate. Particularly contraindicated is the extraction of a lens swollen by imbibition, attended with shallow anterior chamber and sluggish pupil from an irritated iris; for here, in addition to the difficulties of making a proper corneal section, must be considered the probability of the existence of a quantity of particularly tenacious soft cortical substance, the manipulations for the removal of which are almost sure to set up an inflammation of more or less severe character in the already irritated iris; and, furthermore, the swelling of the lens is an indication of rapid progress of maturity which it is unquestionably advisable to await in such case.

With immature cataracts in both eyes, the advisability of operation depends on the rapidity of progress of the more advanced cataract, and the amount of inconvenience to which the patient will be subjected if maturity of the cataract is awaited. At times the ripening process proceeds very slowly, while in other instances it is rapid. The history of the case, giving approximate date of onset of failing vision, will in many cases serve to indicate the rapidity of progression, though in most instances it is advisable for the ophthalmic surgeon to determine the progress of opacification by repeated examinations during a period of from one to four months. If it is determined that the process of opacification is progressing rapidly, it certainly is advisable to await maturity of the cataract before attempting extraction, for it must be admitted that, all things considered, the chances for an easy and complete removal of the lens in its entirety, with a minimum amount of trauma and attainment of the best possible vision, are better if the cataract is mature.

In the rapidly progressing cases it is seldom that a person can not afford to wait for a reasonable amount of maturity before having extraction performed. Such patients should be made acquainted with the fact that in those rapidly progressing cases that are accompanied by swelling of the lens the difficulties of extraction are greater on account of the shallow anterior chamber and impossibility of making a proper corneal section, and the tenacious soft lens substance requires more manipulation to remove it, thus increasing the liability of postoperative inflammation. As a result of all this, with consequent slow recovery, no time is saved by having the operation early, even though the ultimate results are as satisfactory as they would be by waiting for practical maturity of the lens before consenting to extraction.

In those rapidly progressing cases in which there is no swelling of the lens and attending shallowness of the anterior chamber, the recommendation of operative interference should depend on uselessness of the other eye and extraordinary physical or mental conditions which make it advisable to hasten the recovery of vision, and in such instances I consider most persons who are unable to read Jaeger, No. 12, as proper subjects for operation.

In not a small proportion of cases the process of opacification is slow, while in some instances the cloudiness of the lens proceeds until useful vision has been lost, and then becomes practically stationary, with a portion of the lens still more or less transparent. Becker[7] describes a form of premature senile cataract in which "cloudiness develops in the nucleus between the fortieth and fiftieth year after the normal sclerosing process in the lens is far advanced. This cloudiness gradually extends into the transparent cortical substance and has a peculiar white, almost milky, color. This cataract is exceedingly slow in its development, but finally becomes a total cataract. The individuals show in their general appearance that their health has been disturbed for a long time. They are people who have been reduced by disease, excessive bodily exertion, many and difficult labors, material want, grief and care." Becker further states that, without in such cases being able to demonstrate a diseased condition of the nutritive fluids of the body, we may look on the general premature senility of the entire body as a cause of the failure to form the nucleus, which is a feature of a lens which becomes diseased in this manner.

Cortical cataracts are usually progressive, but frequently the progress is so slow that a long period intervenes between the time when cloudiness of the lens interferes with vision and the time when opacification is complete and the cataract may be said to be mature.

In these cases of slowly progressing cataracts of both eyes which may require months or even years to reach maturity, it is an unnecessary hardship to await natural maturity of the lens before adoption of measures for the restoration of vision, and a recognition of this fact led some operators to the adoption of the practice of artificial ripening of the cataract. Several methods have been recommended for hastening the process of ripening, among which may be mentioned simple division of the anterior capsule with a knife needle, iridectomy combined with some form of trituration of the lens, or paracentesis of the cornea combined with external massage.

In my own experience I have found that a preliminary iridectomy alone is usually sufficient to hasten artificial ripening of the cataract, though I doubt the propriety of generally subjecting the eye to the risks of two operations, including the preliminary iridectomy, either with or without trituration of the lens, and the subsequent extraction, when the same end may be secured with equally good results by the single operation of extraction. So far as the value of a ripening operation is concerned, I believe, as has been stated by Weeks,[8] "that the operation for hastening the maturation of the lens does not sufficiently increase the facility of removal of the cataract to warrant the extra risk and trouble to the patient."

The state of vision in slowly progressing senile cataracts of both eyes, which warrants operative interference, will vary in different individuals. In my judgment, when vision has been reduced so that ordinary type can no longer be read, both pleasure and business are suffering from the interference, and the deprivation, if long continued, usually has a more or less detrimental effect on the physical and mental condition of the individual. In such cases I do not hesitate if, aside

7. Zur Anatomie der Gesunden und Kranken Linse, 1883.
8. THE JOURNAL A. M. A., Dec. 15, 1900.

from the semitransparency of the lenses, there are no contraindications, and the patient has been made acquainted with the possibilities as to secondary cataract requiring discission and mild postoperative inflammation, with delayed recovery. I do not expect to encounter any greater difficulty in extracting a lens that is one-third opaque than one that is two-thirds opaque, for in both instances about the same amount of manipulation of one kind or another is required to free the eye of soft lens material, and no more lens substance is apt to be left in the one case than in the other, all things being equal.

The difficulties attending removal of the lens in its entirety have deterred many operators from attempting extraction of unripe cataracts, for no operator from choice will face certain dangers of iritis and secondary cataract which invariably follow if any considerable amount of soft lens substance is left in the eye; and every operator knows that efforts to tease out the cortical remains alone carry with them the possibilities of trauma, which may provoke irritation or possibly result in rupture of the zonule and loss of vitreous.

Successful results from the extraction of immature cataract must, therefore, come from the adoption of methods which make it possible to remove, at the time of operation, practically all the cortex, with a minimum amount of trauma and subsequent inflammatory reaction, and the employment of such postoperative treatment as will tend to limit the effects of inflammatory reaction and promote resorption of any retained cortical substance. In my judgment the operative essentials to bring about the result are: First, a large corneal section, embracing not less than two-fifths of the corneal circumference; second, an iridectomy with a fairly large coloboma extending to the ciliary border; third, a large opening in the capsule by two incisions at right angles to each other; fourth, gentle irrigation of the anterior chamber with a sterile normal salt solution, after the extraction of the nucleus, if much cortex remains; fifth, the early and free use of atropin, and, sixth, the use of dionin, after the corneal wound has closed, to promote resorption of lens débris.

The advantages of a large corneal section are embraced in the ease with which the hard nucleus is removed without undue manipulation of the eyeball, and the increased certainty with which the irrigating fluid and soft cortical material pass out without provoking irritation from damming up in the anterior chamber.

The coloboma from the iridectomy not only facilitates removal of the soft cortical substance by furnishing a sluice-way for its escape and averts secondary iris prolapse, but tends to prevent the development of postoperative glaucoma.

The reason for the large opening in the capsule is obvious, for, with an insufficient opening, which may not be enlarged by the escaping small hard nucleus, the collapsing capsule may retain within its folds considerable quantities of lens substance which it would be difficult to remove. These enclosed masses of lens substance when cut off from the aqueous by collapse of the capsule are not resorbed, but remain to form a white membranous cloudiness or secondary cataract. If the opening in the capsule is sufficiently large, the cortex remaining after the extraction of the nucleus, even when in considerable amount, will swell up and become resorbed. This swelling of the retained cortical substance, however, with the production of an iritis, which even the liberal use of atropin does not always control, is one of the complications which we should make an attempt to avoid, and indicates the necessity for the adoption of more effective means for the removal of the soft cortical substance at the time of the extraction than is accomplished by stroking and other manipulations ordinarily employed.

The most effective means for removing the cortical remains is irrigation of the anterior chamber. Several methods have been advocated, but the one preferred is that of Lippincott, in which a continuous stream is allowed to flow by gravity through a small specially constructed canula, into the anterior chamber, the force of the stream being properly regulated by the height at which the reservoir is held, and the flow being entirely under the control of the operator, who may stop or start the stream by the use of a suitable lever. To avoid trauma, only the tip of the canula should lie between the lips of the corneal wound, and the stream should have only such force as is given it by elevating the reservoir no higher than is necessary to establish a continuous current by gravity.

Until recently I have also used with great satisfaction the method advocated by Dr. Flemming Carrow, in which the anterior chamber is irrigated with a stream from a wash bottle designed something like an ordinary bulb atomizer and having a specially constructed tip for irrigation purposes. While excellent results may be secured with this apparatus when properly employed, the objections to it are that unless the operator employs unusual delicacy and steady pressure on the rubber bulb, the stream is apt to possess too much force, with consequent trauma to the tissues. Also, unless due care is observed, air is likely to be forced into the anterior chamber, and the bubbling, with its unpleasant sensations, cause the patient to make some unexpected move which may prove disastrous. The originator of the device, who has had a very large and very successful experience in cataract extraction, does not direct the stream directly into the anterior chamber, but allows it to flow across the lips of the corneal wound, thus creating a very gentle but continuous current through the anterior chamber, with the result that the bulk of the soft cortical lens substance is carried out.

Those who practice irrigation of the anterior chamber vary in their preference as to the solution to be used. Sterile water, boric-acid solution and physiologic salt solution are about equally employed. In my own practice physiologic salt solution is preferred as being less likely to produce irritation from its own qualities.

Irrigation, if it is to be accompanied by a minimum amount of irritation and yet be effective, should be carried out with the utmost delicacy. The stream should be continuous, but possess no more force than that obtained by gravity when the reservoir is just high enough to create a current; and less trauma is likely to result if the current is directed into the anterior chamber on a line with the corneal section. Prolonged irrigation should also be avoided, as it is entirely unnecessary and is apt to be attended with increased trauma. If the capsular opening is large, it is seldom that the bulk of the soft cortical substance is not removed, but, if not removed, prolonged irrigation is not warranted, as much of the remaining lens substance will be resorbed by the action of the aqueous, and if not resorbed had better be subsequently divided by a discission operation rather than removed by prolonged irrigation or other manipulations which increase the possibilities of trauma and resulting serious inflammatory reaction.

It must be admitted that, in spite of proper care exercised in the performance of this procedure, in nearly all of the cases more or less iritis is the rule rather than the exception. This is due to the slight trauma necessarily following the irrigation and the irritation produced by the swelling of the remaining soft lens substance. In the majority of instances this iritis produces no serious consequences if atropin is used early and continued until all signs of irritation have disappeared. In many cases the irritation of the iris is no more than accompanies the extraction of mature cataract, but it is well to anticipate it and to adopt the proper medical measures early in the progress of the case. It has become my practice to anticipate such trouble by using atropin at the time of the first dressing, 36 to 48 hours after the extraction.

A remedy that I have found of decided service in promoting resorption of lens débris following cataract extraction is dionin. This drug, as has been pointed out by Darier,[9] possesses decided lymphagogue properties, and further experience in its use to promote resorption of cortical remains warrants me in reiterating a statement which I have previously made[10] that "the remarkable results secured by dionin in clearing the pupillary space following cataract extraction has led to the belief that, with the more or less general employment of this drug, after cataract extraction, secondary operations will be lessened in number." It should be remembered, however, that some persons apparently do not react to dionin, and in such I have not been able to detect any favorable action in promoting resorption of lens débris, but it may be said in its favor that if it produced no favorable action it certainly has produced no unfavorable results.

Until the susceptibility of the patient to dionin has been determined it is best to begin with a 5 per cent. aqueous solution, and, owing to the active smarting produced, it is advisable to precede the application with an installation of cocain. Owing to the smarting, with involuntary tight closing of the eyelids, with attending pressure on the eyeball and the sneezing that is occasionally induced, it is also advisable to use dionin only after the corneal wound has been securely closed for a period of from five to seven days.

In susceptible persons dionin produces marked vascular injection, with edema and extravasation of lymph, and in my experience the more marked the reaction in this respect the more marked is the favorable action in promoting resorption of lens débris; in fact, the strength of the solution is increased to 10 per cent., or the pure powder is used, in an endeavor to produce such reaction in those who do not apparently respond to the usual effect of the drug. Unless there is decided reaction the applications are repeated from two to four times per day for a period of four days, at the end of which time a certain tolerance is established and no further beneficial effects may be expected until an interval of at least a week has elapsed. While there are a few cases in which this remedy seems to have no appreciable effect in promoting resorption of the cortical remains, in a larger number of cases the results secured in effecting a clearing of the pupillary space, even where a considerable quantity of cortical lens substance has remained, have been so strikingly favorable that I feel warranted in unhesitatingly recommending the employment of this measure as a routine practice after all cataract extractions. I am still further influenced in giving this recommendation because of the fact that dionin has a marked favorable action in the treatment of iritis, in promoting the absorption of exudates and increasing the effect of atropin; and, as iritis accompanying swelling cortical lens remains follows cataract extraction, there is double reason for the employment of dionin.

The extraction of immature senile cataract may be attended with more complications and less favorable immediate results than the extraction of mature cataract, but the final results, when the cases are properly handled, should compare favorably with the extraction of cataract in any stage. In the extraction of immature senile cataract in persons of any age I have learned to expect a certain amount of soft lens substance, but with a large opening in the capsule and the employment of irrigation the greater portion of the lens débris is removed, and what is not removed is generally resorbed either with or without the assistance of the action of dionin. Discissions, while necessary in a fair proportion of cases, are not, in my experience, so frequently required as formerly or before dionin came into favor as an agent to promote resorption of lens débris. Iritis, frequently seen, either produced by trauma at the time of the operation or subsequently by the action of the swelling lens substance remaining, is controlled by the early and free use of atropin.

Admitting that the immediate results from the extraction of immature senile cataract are not as good as in the extraction of mature senile cataract, on account of the greater possibility of having to contend with iritis and secondary cataract, it is nevertheless a fact that the ultimate results are equally as good, and this opinion is attested by many of the most prominent operators of the United States, whose views on this subject are appended to this paper. That the complications arising are no greater than those accompanying the extraction of hypermature cataracts, which form a considerable portion of the number of cataracts presented to the average operator for extraction, is also accepted as a fact, for in both classes of cases the development of an iritis and the formation of a secondary cataract are the rule rather than the exception. The slow recovery in a few cases, due to inflammatory reaction directly dependent on the effects of the operative procedures, while seemingly indicating that the operation has not been to the best interests of the patient, are not generally detrimental to the extent usually supposed; for under such measures as herein advocated the iritis usually completely subsides in from two to six weeks, soon after which, if required, the discission operation may be performed. Even with more protracted recovery the patient is usually favored with the restoration of vision much sooner than could possibly be expected had maturity of the cataract been awaited, and this at a time when the general health has not been impaired by the enforced inactivity and the mental disquietude occasioned by a prolonged period of waiting for complete opacification of the lens before extraction.

My personal experience in the extraction of immature senile cataract, while not large, has been very satisfactory. During the past four years, or the period during which I have followed the practice, I have extracted twenty-five more or less unripe senile lenses, and ten of the number have been operated on within the past fourteen months. In all the cases the ultimate vision has compared favorably with the vision obtained in the cases of mature cataract operated on either during the same

9. Ocular Therapeutics, 1903.
10. Ophthalmic Record, August, 1904.

period or before. In eight cases the vision was 20/20; in ten, 20/30; in two, 20/40; in three, 20/70, and in two, 20/200. Nine of the cases required secondary operations, and six should have had secondary operations, but for one reason or another did not have them. In all but two of the cases in which vision was under 20/20, there was secondary cataract, and, as some of those were lost sight of soon after the operation, it is possible that vision improved in course of time as a result of resorption of a greater amount of the lens débris. A striking feature of the eight cases having 20/20 vision was the fact that but three had a secondary operation, and the remaining five, which soon after the extraction gave evidence of requiring a secondary operation, obtained excellent results under the effect of dionin. Three of the latter cases were under 60, and one but a little over 50 years of age. Practically all of the cases had irrigation of the anterior chamber and few escaped at least a mild iritis, though the inflammatory action had nothing to do with the failure to secure good vision in any of the cases. All of the cases had the combined operation. In only three cases was preliminary iridectomy performed, and in all three, following the extraction, a subsequent operation for secondary cataract was required. All of the cases were what would be called uncomplicated, in that they had no marked choroidal or vitreous changes, swelling of the lens, or external evidences of disease. In all of the cases vision had been reduced below the patient's requirements.

With a view of obtaining information from other operators as to the practice of extracting immature senile cataract, the following inquiry was sent to a large number of prominent ophthalmologists: (A) Do you extract uncomplicated immature senile cataracts? If so, what is your rule as to (1) Age of patient? (2) State of vision of eye to be operated on? (3) State of vision of fellow eye? (4) Form of operation to be performed, simple or combined, or preliminary iridectomy and extraction later? (5) Irrigation of anterior chamber, and, if employed, what solution used? (6) Use of dionin to promote resorption of débris? (B) Generally speaking, what have been your results in extracting uncomplicated immature senile cataracts as compared to extraction of uncomplicated mature senile cataracts: (1) As to vision obtained? (2) As to development of secondary cataract requiring operation? (3) As to inflammatory reaction from operation? (C) What difficulties have you encountered in extracting immature senile cataracts? (D) What objection, if any, have you to extraction of immature senile cataracts?

While some of the questions were not answered even in a general way and others were answered in such manner as to admit of no definite interpretation, I find by analyzing the reports containing specific answers that out of 65 who responded, 25 have no hesitation in attempting extraction of uncomplicated immature senile cataract, 22 perform the operation with some hesitancy but apparently not from choice, 9 have serious objections to the practice, but in certain apparently urgent conditions take what they term the "risk" of the operation, and 8 do not extract immature senile cataracts at all, because they consider the final results bad in the majority of instances.

All who operate have as a condition of the operation that the eye to be operated shall have sufficient failure of vision to interfere seriously with the pleasures and pursuits of the patient, and an equal failure or complete loss of vision in the fellow-eye. In no instance is an operation advocated when there is vision in the better eye sufficient for the patient's needs.

In considering the advisability of operating, 32 do not consider the age, 3 place the age limit at 40 years, 3 at 50 years, 6 at 55 years, and 7 at 60 years. In nearly all instances, the form of operation selected is reported as varying with conditions presented, but the first choice is given as preliminary iridectomy by 27, combined operation by 18, and simple extraction by 10. Some say, and presumably all intend to convey the idea, that preliminary iridectomy is performed with the idea of artificially hastening the opacification of the lens before extraction. In a few instances mention is made of trituration of the lens at the time the preliminary iridectomy is performed.

Thirty practice irrigation as a routine measure or reserve it for those cases in which the soft lens substance does not come away easily by usual manipulations, and with four exceptions physiologic salt solution is the solution preferred.

Nineteen use dionin to promote resorption of lens débris, and out of this number nine report good results, the others reporting doubtful results or not referring to effect.

While nearly all report that secondary cataracts and mild postoperative inflammations, with slow recovery, are more frequent than in extraction of mature cataracts, they almost without exception report as favorable ultimate visual results as in mature cases.

It is quite possible that with an improved technic, including many if not all of the essentials herein advocated, that the development of secondary cataracts and postoperative inflammations will be reduced to the point where they will not occur more often than after extraction of mature cataracts. But even if this were so, the results obtained by the operators herein reported, as well as by myself, warrant me in recommending the extraction of uncomplicated immature senile cataract, irrespective of age, in all those persons who, on account of the clouding of the lens, have vision reduced to such a degree that the individual can not follow the ordinary vocations of life.

OPINIONS OF PROMINENT OPERATORS ON EXTRACTION OF UNCOMPLICATED IMMATURE SENILE CATARACT.

HERMAN KNAPP, New York City: Yes. Uncomplicated, unripe cataracts can be operated on with a good prospect of success when the general and ocular conditions are favorable and a large corneal section can be made.

F. C. HOTZ, Chicago: The question of extraction of unripe cataract can arise only if the vision of both eyes is so much impaired that the patient can not attend to his business any longer. As long as he enjoys fair vision in one eye, the operation is not warranted. If both eyes are affected I am guided by the condition of the lens whether to operate immediately. If the cataract presents an opaque nucleus enveloped in a cortex which, though not completely opaque, is sufficiently so that the pupil shows only a faint red reflex, I operate, and I find these cases yield generally as good results as the perfectly mature cataracts. But if the cortex shows sections of almost perfect transparency, I do not regard extraction advisable, because the transparent substance can not be gotten out cleanly, even by irrigation, and its subsequent swelling causes complications in the healing, iritis and dense secondary cataract. As in these lenses, the opacification usually progresses rapidly, I think it is wiser to let the patient wait a few months than to take any chances. But should the patient insist on having something done at once, I perform a preliminary iridectomy, and massage the lens to hasten the process of opacification. On the other hand, there is a kind of immature cataract, and I see them often, which I extract without hesitation, though the vision may be 20/100 or better and the ophthalmoscope shows good red reflex. These lenses show a rather uniform diffuse haziness without distinct nucleus, vary little in the course of a year, and never become completely opaque. When extracted, they come out as one semi-translucent yellow cake; there is no cleansing necessary; the pupil appears perfectly clear and black; and the results are excellent; in fact, I am almost inclined to say better than after extraction of the ordinary mature cataract.

JOHN E. WEEKS, New York City: Yes, in persons more than 55 years as a rule, who are unable to read ordinary primer type with the eye to be operated on and vision in fellow eye is lost or reduced so that the patient is unable to follow vocation. Preliminary iridectomy performed in many cases, combined operation in some, simple operation in a few. Irrigation with normal sa-

line solution if any cortical lens substance remains. Results as compared with mature cases, very little difference. Degree of vision, taking all cases, perhaps a little less. Maximum vision not reached so soon. Vision 20/20 in about 50 per cent. of the cases. Secondary cataracts more freqeunt than in extraction of uncomplicated mature cataracts. Seldom have subsequent inflammatory reaction. Cortex more adherent to capsule than in mature, but not more so than in hypermature. If lens is shrunken, nucleus amber colored, anterior chamber as deep or deeper than normal, I do not hesitate to operate. If lens is large, asbestos striped and anterior chamber shallow, I hesitate to operate. Maturity does not always mean complete opacification of the lens substance. I have abandoned the ripening operation for the reason that the facility of removal is not sufficiently increased to warrant the extra risk and trouble to the patient. Whenever in the development of cataract the vision is reduced to such a degree that the individual can not follow the ordinary vocation of life, provided there is any reason for not waiting until the cataract is matured, I do not hesitate to advise operation.

G. E. DE SCHWEINITZ, Philadelphia: I may say in general terms that I very frequently extract immature cataract, but that I do not extract it if the lens is in the stage of swelling, which I believe to be distinctly a contraindication, especially if associated with the swelling there is much shallowing of the anterior chamber. I do not believe that it is at all necessary to watch for what we used to call full maturity, especially if the patient is past the age of 55 or 60. I always make an iridectomy if I extract an unripe cataract, and preferably a preliminary iridectomy, which I believe to be far the safest way of dealing with these cases. I do not know how many unripe cataracts I have extracted, but the number is large. I have never had a serious disaster, although I have been obliged on some occasions to make more than one discission subsequently to get rid of cortical remnants. My experience with washing out the anterior chamber is a very limited one, as at one time I was very positive that it was a bad procedure. I have begun to change my views, however, since seeing some very excellent results in the hands of some of my friends, and I think that hereafter, should I meet with cases in which it was difficult to remove remnants in extractions of unripe cataracts, I would certainly use irrigation. In general terms, I would say that my operations for extracting unripe cataracts have been quite as good as those which I obtained after extracting ripe cataract, although the procedure has been more trouble in some instances. I believe it is better to extract an unripe cataract than it is to do a ripening operation.

CHARLES H. MAY, New York City: Yes, in persons of any age if the vision in each eye is sufficiently reduced to interfere with the patient's usual occupation. The combined operation is generally preferred, but if the cataract occurs in an individual in whom the other eye is blind, preliminary iridectomy is performed. Irrigation with physiologic saline solution is employed if cortex is left. Dionin not used. Results compare very favorably in the end with results in extraction of mature cataracts. Secondary cataract relatively more frequent, and as a rule rather more inflammatory reaction. No special difficulties encountered in extraction of immature cataract and no objections to the practice.

EDWARD JACKSON, Denver: Yes, in persons of any age if the case presents the visual need, i. e., vision in each eye reduced so as to interfere with patient's usual occupation. The simple operation preferred, but in certain cases the combined. Irrigation rarely employed, but when used, physiologic salt or boracic-acid solutions preferred. Have not tried dionin. Results as satisfactory as in extraction of mature cataract and equally good vision ultimately. Secondary cataract more frequent, but by no means constant. No greater inflammatory reaction. Difficulties encountered are those connected with removal of cortex. My only objection to extraction of immature senile cataract is that the immediate result is not so good. This does not deter me from operating in suitable cases.

CHARLES H. WILLIAMS, Boston: Yes, in persons of any age having good or fair general health when vision in eye to be operated on is less than 1/10, and vision of fellow eye is reduced so that the patient can not do necessary work. Simple extraction preferred. Employ irrigation with one-half of 1 per cent. salt solution if much cortex is left. Do not use dionin. Results about the same as in extraction of mature cataract. Results sometime depend more on the general health and disposition of the patient than on the question of maturity of the cataract. Secondary cataract occurs more frequently than in mature cataract. Inflammatory reaction perhaps a little more frequent. Ultimate results as good as in extraction of mature cataracts.

H. D. BRUNS, New Orleans: I sometimes extract immature cataracts in persons of any age if there are no contraindications in the general health of the patient or the condition of the eye to be operated on. State of vision must be inability to read ordinary print with eye to be operated on and an equal disability in fellow eye. Operation preferred depends on circumstances. Unless there is some reason in the disposition of the patient, or unfavorable local conditions (rigidity of pupil, elevated tension, corneal opacities, etc., etc.), I always do simple extraction. If the section has been too small, iris does not reduce well, and is bruised by manipulation, much cortex is left behind, or much opaque capsule, patient restless and causing prolapse after one or two successful reductions, I at once proceed to do iridectomy. If at end of forty to forty-eight hours, when dressing is removed for first time, there is prolapse, I do iridectomy then. All these reasons, circumstances and conditions incline me to iridectomy much more in case of immature than mature cataracts. I use irrigation sometimes, but prefer to do without it, and without anything that increases the amount of trauma and the number of instruments introduced into the eye. I do not use dionin. Results are practically the same as in mature cases. Have seen no striking difference in the ultimate vision. Nearly always there is denser secondary cataract, and usually more inflammatory reaction, owing to greater traumatism in getting away cortex and denser contracting secondary cataract. Difficulties encountered are those connected with removal of cortical lens substance left behind when nucleus delivered. I have no objection to the practice if indicated, i. e., patient so blind in both eyes as to be unable to read or amuse himself with near-work. So long as the patient can read and write and pursue ordinary vocation with one eye I decline to do any extraction in senile cataract. Patient often dies before operation is necessary. Cataract extraction is surely a major operation. The shock is more than it seems the patient or we anticipate. I am convinced that it often hastens the breakdown and death of old people. Slight immaturity I totally disregard. When patient has but one eye I always do preliminary iridectomy, whether cataract is mature or not. In such cases I would wait for a greater degree of maturity than where the patient had both eyes operable, as the patient should have the best possible chances for the restoration of vision in his only eye.

VARD H. HULEN, San Francisco: Yes, in persons of any age. No rule, but prefer older patients. Vision of patient must be so poor in each eye as to interfere with ordinary pursuits, and cataracts of very slow maturation. Prefer the combined operation, but sometimes do simple extraction. Practice irrigation of the anterior chamber with normal saline solution if much lens matter remains. I have not tried dionin. Results about the same as in extraction of mature cataract and equally good vision. Secondary operations more often necessary than following extraction of mature cataracts, and expect inflammatory reaction more often. No special difficulties encountered, but more manipulation required in removing soft lens substance. Have no objections to the practice when patient's sight is so reduced as to incapacitate individual.

FRANK C. TODD, Minneapolis: I frequently extract immature cataracts, and am not governed so much by the age of the patient as by other conditions; i. e., the slow progress, with poor vision in the fellow eye. When the vision interferes with going about, or in a younger patient who would otherwise be able to follow some vocation, I extract immature cataracts or do a trituration, providing the vision in the fellow eye is poor enough to interfere with going about or with occupation. I prefer, as a rule, the combined operation, or preliminary iridectomy with trituration, and extraction later. I have had no experience with either irrigation of the anterior chamber or the use of dionin. As compared to the extraction of mature cataract, my results have been equally as good. There are a large percentage of secondary cataracts, except when trituration has been performed. The inflammatory reaction is not more than after the extraction of mature cataracts, though atropin should be used for a longer period or until the soft matter has had time for absorption. In general, I would say where a cataract has made good progress in ripening, I wait until it is mature or nearly mature; but when progress is slow and the patient is incapacitated by poor vision in both eyes, I extract the one that is most mature, and in case it is very immature and very slow in maturing I do a trituration. I am aware of the fact that this operation of trituration is frowned on by many, but I am convinced that it has its place, and I am further convinced that it makes a difference as to how the operation is done. When properly done it is better than to extract a very immature cataract, and after extracting an artificially ripened cataract I have never had to do a needling or secondary cataract operation.

J. A. WHITE, Richmond, Va.: Yes, but only in cases of very slow development. No rule as to age of patient. I never operate as long as patient has good vision in one eye, but when vision is no longer useful in either eye, and the cataracts have been long developing, I operate whether they are mature or immature. Prefer preliminary iridectomy, or iridectomy at the time of extraction. Sometimes use irrigation with normal salt solution. Have never tried dionin. Results nearly the same as in extraction of a mature cataract, and vision secured practically the same. Secondary cataract or cloudy capsule is more frequent, and iritis more common. No difficulties encountered, except that the cortex is more sticky, especially under 60 years of age, and is harder to remove. Do not object to extraction of immature cataract if the other eye is failing rapidly, otherwise prefer to wait. I sometimes, however, under 60 years of age, hasten maturity by triturating the lens. I have removed about 600 senile cataracts, and among them a number of immature ones, but can not say exactly how many.

WILLIAM ZENTMAYER, Philadelphia: Yes. Age not a factor. Am guided by circumstances of the patient as to vision at time of operation. If necessary to earn a livelihood, would operate as soon as the patient is incapacitated for that work. If independent, would advise him to await maturity. Prefer either combined operation, or preliminary iridectomy and extraction later, depending on the amount of unripe cortex. Irrigation of the anterior chamber with physiologic salt solution employed occasionally, but not invariably. Dionin used to promote absorption of débris. Results, so far as vision is concerned, about as good as in mature cataract. Secondary cataracts more frequent and inflammatory reaction more marked. The difficulties encountered are principally those connected with removal of the soft cortical matter. The objection to extraction of immature cataract is that it does not afford the patient the best condition for a successful result, for the reason that the eye is usually subjected to a larger number of operations with attending risks.

SWAN M. BURNETT, Washington: I prefer not to operate on an immature cataract, as I think the risk is greater, but if both eyes are affected and total blindness in both eyes is near, I take the chances to gain one eye for use. I seldom do an iridectomy for any kind of extraction, and have not tried irrigation of the anterior chamber. I have had some experience with the use of dionin to promote resorption of débris following cataract extraction and am pleased with the results. As compared to extraction of mature cataract, the chances for success are not so great, and the healing process is longer, with greater liability to complicating inflammation. My objection to the extraction of immature senile cataract is, therefore, the greater danger from postoperative complications.

LEARTUS CONNOR, Detroit: Yes. Age is not considered a factor, only the reparative power. Vision must be useless for any work. Prefer preliminary iridectomy and extraction later, though sometimes do the combined operation. Irrigation with weak boracic-acid solution sometimes employed, and dionin used to promote resorption of any lens débris remaining. Results not greatly different than in mature cataract. Secondary cataract not much more frequent, but slightly more inflammatory reaction. There is nearly always greater difficulty in removal of all clear lens. The objection to extraction of immature senile cataract is that it is impossible to know when all of the cortical matter has been removed, and unless removed there is apt to be greater reaction and perhaps the development of secondary cataract requiring further operative attention. This does not deter me from operating in suitable cases.

F. B. EATON, San Francisco: I have records of the extraction of a number of traumatic cataracts in patients 40 and above, in which the conditions were about the same as in an immature senile cataract, and the principle of treatment essentially the same. The combined operation was performed, with irrigation of the anterior chamber with normal salt solution for the removal of soft cortical material. For irrigation, I have used a device of my own, consisting of a piece of small glass tubing with soft rubber bulb at the end, the nozzle being appropriately tapered. I irrigate the anterior chamber freely, or until the pupil is perfectly black. I have never had a bad result which I thought could be attributed to the irrigation, and this is probably because the nozzle is so large that it produces a gaping of the wound, thus preventing the pressure of the fluid in the anterior chamber. I have not tried the use of dionin, but believe it indicated in certain cases. My objection to the extraction of immature cataract is that there is increased risk from inflammatory reaction and secondary cataract.

WILLIAM H. WILDER, Chicago: Yes. Age is not a consideration. Vision must be so low as to prevent following occupation. Usually perform preliminary iridectomy, but sometimes the combined operation. Rarely use irrigation of the anterior chamber. Have used dionin to promote absorption of débris, and consider it entirely proper. Results not quite so satisfactory as in mature cases, for not so good vision recovered and usually a secondary operation is necessary. Iritis is also more common as a result of swelling cortical remains. The cortex comes away with difficulty, and what is left is not always readily absorbed. I would not hesitate to operate on immature cataract if the sight of both eyes is affected to the degree of helplessness. If the patient has one good eye I should advise waiting for the cataract to mature, or become nearly mature, and would content myself with a preliminary iridectomy.

C. R. HOLMES, Cincinnati: Yes, in persons over 40, having vision 50 per cent. or less in both eyes, or 50 per cent. in the one eye, the other being blind or at least useless. Prefer combined operation, or preliminary iridectomy and extraction later in certain cases. I do not use irrigation, and have not tried dionin. Final results as satisfactory and vision as good as in extraction of mature cataract, though secondary cataracts requiring operation are more frequent, and there is usually slightly more postoperative inflammatory reaction. Have encountered no particular difficulties, but there is more soft cortical substance to be removed than in a mature cataract. Do not object to performing the operation in proper cases.

W. C. POSEY, Philadelphia: I believe that immaturity of a lens is no contraindication for its extraction, my rule being to remove the ripest lens in all cases of cataract, irrespective of age, as soon as vision is so low in the best eye that the patient is unable to get about or perform the ordinary duties of life—in other words, when the test-cards show the vision in the best eye to be reduced to about 3/60. Under such circumstances I do one of three things, according to the circumstances of each case: First, a ripening operation; second, a preliminary iridectomy; third, extraction with iridectomy. If the most affected lens is very unripe, I open the anterior chamber and triturate the anterior capsule of the lens directly, removing the lens at the expiration of a few days or several weeks, according to the effect of the operation in ripening the lens. If there is no need for haste, preliminary iridectomy is done, it being found that the performance of this operation frequently aids in the ripening process as well as facilitating in the removal of the lens later. If a ripening operation or a preliminary iridectomy is not indicated, the lens is removed by the combined operation, the simple operation being reserved for mature cases only. After the removal of an immature lens the anterior chamber is frequently irrigated with a McKeown irrigator. Dionin in the strength of 4 to 8 per cent. has been found of value in promoting absorption of the débris, and has been used in many cases during the past year. I am convinced that my results in operating on immature cataracts in the manner described have been fully as good as those on mature lenses. I should say that fully 80 per cent. of the cases obtained practically full visual acuity, but I think a discission for secondary cataract was required in at least 70 per cent. of the cases. Inflammatory reaction has followed the operation in many instances, but not oftener I should say than after the removal of a mature lens. I know of no difficulties or objections to the removal of an immature lens. If possible, I think it best to avoid operating in the stage of greatest swelling, as in such cases the cortex shows a greater tendency to adhere to the capsule than when the cataract has proceeded further toward maturity.

E. E. HOLT, Portland, Maine: Yes, in persons above 50 years whose vision has been so reduced that they are unable to count fingers. Formerly I did a preliminary iridectomy or the combined operation, but now do simple extraction. Irrigation used when thought necessary for the removal of soft cortical material, and dionin also used to promote resorption of any lens substance remaining. Final results good and vision not different than following extraction of mature cataracts. Do not believe that there have been any more secondary cataracts, or that I have had more secondary reaction than occurs with mature cases. In some instances the lens was more difficult to start out of the capsule. I have no serious objections to the extraction of immature senile cataract, and am willing to abide by the decision of the patient when it is made after due consideration of the facts. I do not remember of a single instance in which the patient or I regret that the operation was performed.

ROBERT L. RANDOLPH, Baltimore: Yes, in persons over 60 who have loss of reading power. Perform combined operation always, and some of my best results followed preliminary iridectomy. Do not use irrigation or dionin. Ultimate results satisfactory; in fact, I do not recall a failure. Final vision about the same as in extraction of mature cataract. In nearly every case there was secondary cataract requiring discission, and a mild iritis in every case. I do not object to performing the operation in such cases as mentioned.

S. D. RISLEY, Philadelphia: I believe that while opacity of the lens is a disease of advanced life, it does not in all probability depend on senile change, but is originated in local pathologic states involving the nutrition of the eye itself; that hence in the stage of incipiency it is amenable to treatment by such measures as are calculated to remove the choroidal disease on which it depends; that if treatment fails to arrest the progressive degeneration in the lens, by virtue of the treatment adopted, the eye will be in a better condition to submit to the trials of operative interference. I never attempt extraction by the simple method in a dark gray or amber-colored homogenic lens that has ripened slowly, or on one that is translucent. In such cases secondary capsulotomies are almost invariably required, and there is a tendency to an inflammatory reaction from the slight traumatism. In these cases a preliminary iridectomy is performed, and from four to six weeks later the extraction. If after delivery masses of gray cortex remain, either free or adhering to the capsule, their removal by irrigation by a sufficiently free employment of a warm salt solution is preferable to the introduction of a spoon or considerable rough manipulation for its extrusion. Secondary capsulotomies are almost without exception required in these cases. If inflammatory reaction follow without evidence of infection, the great liability to local manifestations in those of rheumatic or gouty diathesis should be borne in mind as indicating the general therapeutic measures to be adopted. The value of salicylic acid in these cases I have many times seen demonstrated.

FLEMMING CARROW, Detroit: Yes, in persons of any age when reduction in vision prevents transaction of ordinary business. Do the combined operation in nearly every case. I always irrigate with a device of my own, using saturated solution of boracic acid, whenever any lens substance is left in the anterior chamber. I do not use dionin. Results as satisfactory and vision secured is as good as in extraction of mature cataract. About 50 per cent. of the cases require a discission of secondary cataract, and the same percentage of cases have postoperative inflammation. I do not object in the least to extraction of immature cataract under conditions mentioned. I am forced to express the opinion that any method of irrigating the anterior chamber after cataract extraction is productive of iritis unless used in the most delicate manner. This I state with great positiveness; but with a lot of lens débris left in the anterior chamber which can not be removed by spoon, stroking the cornea or any other manipulation, irrigation seems the best procedure for accomplishing the desired result. This applies to cases of hypermature cataract as well as those which are immature. I know that I am stating it properly when I say that the results are just as good if the senile cataract is removed while the patient is still able to read Jaeger No. 14 or Snellin 20/200. A man with this vision is practically put out of business, and there is no use waiting. This is not stated on the experience of ten or twenty cases, but on hundreds. I not only operate on these cases now and then, but it is my rule. I have operated on fourteen cases recently, eleven of which were immature, and the results were better in the immature cases than in the three which were mature. I do, however, expect a little postoperative iritis, which is probably due to irrigation of the anterior chamber. This, however, does not interfere with good results if atropin is early and persistently used.

M. H. POST, St. Louis: Yes, in persons of any age when cataracts reduce vision so that magazine type can not be read. Combined operation preferred. I do not irrigate the anterior chamber, and have not tried dionin. Ultimate results as good as in extraction of mature cataract. In my experience secondary cataracts are no more frequent than in mature cases, though there is possibly a little more inflammatory reaction. No objections to the operation if state of vision warrants interference.

J. M. RAY, Louisville: Yes. Age not considered if patient is in good general health. Would operate as soon as the patient is unable to follow vocation. Combined operation performed, but sometimes a preliminary iridectomy. Irrigation with normal saline solution when necessary for the removal of soft lens substance. Dionin not used in this class of cases. No greater reaction than in mature. No difficulties beyond leaving too much soft lens substance in the anterior chamber which takes a long time to absorb, but which does absorb without trouble in time. Prefer to have an opaque lens, but have no great objection, in suitable cases, to removal of a semitransparent lens.

ALVIN A. HUBBELL, Buffalo: Yes, in persons over 55, with vision in eye to be operated on 10/60 and vision in fellow eye nearly as poor. Usually perform preliminary iridectomy, followed by extraction later. Employ irrigation when there is much soft cortex, using sterile normal salt solution and Lippincott irrigator. Do not use dionin. Results much the same as in mature cases with vision good in fellow eye never operate on the cataract. Prefer more frequent, and a little more reaction in a small proportion of cases. No particular objection to the practice. There is a little more danger of iritis.

G. C. SAVAGE, Nashville: Yes, and regardless of age, other conditions being favorable, when vision is too low to be useful. When vision good in fellow eye never operate on the cataract. Prefer combined operation. I never irrigate and I never use dionin in this class of cases. Results just as good as in mature cases with vision from 20/50 to 20/20, greater number about 20/30 finally. In nearly all cases I do a secondary operation in from one to twelve months. Only occasionally is there any reaction. Have lost only one eye from secondary operation. Have no objection whatever to practice of extraction of immature cataract.

J. H. CLAIBORNE, New York City: Yes, age not considered, provided patient in good condition. Vision in eye to be operated on, fingers at 1 foot to 20 feet. Vision in other eye not useful. Combined operation performed. As a rule, do not use irrigation, but when employed use boric acid or normal saline. Do not use dionin. Results not quite so good as in mature cases. Useful vision, but not so good as in mature cases. Secondary cataracts in nearly all cases, but no more reaction than usual in any extraction. More difficulty in removal of the cortex that remains. Prefer to wait unless the patient is impatient or the conditions of his life demand extraction. Best results are obtained in sclerosed immature cataracts.

C. A. VEASEY, Philadelphia: Yes, in persons over 55 years of age approximately, if patient is in good health, and when vision in eye to be operated is reduced so as to make it difficult for patient to get around, and there is advancing opacity of lens in fellow eye. Combined operation performed. If one eye has been lost, always a preliminary iridectomy. I seldom irrigate: if I do I use normal saline solution. Had little experience with dionin, but in three cases it certainly seemed to assist. Results as good as in mature cases, with equally good vision. A large percentage of my cases required discission of capsule, but so do mature cases. Postoperative inflammation not frequent. Lens matter is removed by gentle manipulation. Practically no more difficulties attending extraction than in mature cases, providing cortex is removed by stroking cornea through closed lid or in rare cases removed by irrigation. Have no objections to operation. Have been doing it for ten years.

H. F. HANSELL, Philadelphia: Yes, in patients 55 and over who have lost vision in both eyes for pleasure and business. The order

of preference in the form of operation to be performed is: First, preliminary iridectomy, with extraction later; second, extraction with the combined operation; and third, simple extraction. Various circumstances and conditions guide me in the selection of the operation. Irrigation when employed is with normal salt solution. Dionin is not used. Generally speaking, the results in extracting immature senile cataracts have been equally as good in every respect as the results in extraction of mature senile cataracts. Secondary cataracts requiring operation are present in perhaps 90 to 95 per cent. of the cases. There is also a greater tendency to iritis unless preliminary iridectomy has been done. The difficulties in extracting an immature cataract are those concerned in the removal of all of the lens. I have no objection to the extraction of immature senile cataracts if loss of vision warrants the operation.

WURDEMANN & BLACK, Milwaukee: Yes, in patients over 45 whose vision in both eyes is below 6/60. Preliminary iridectomy and secondary extraction is preferred, and the anterior chamber is irrigated with normal salt solution. Dionin to promote absorption of debris is used in powder form. Results as satisfactory as in the extraction of mature cataracts. About 50 per cent. of our cases require secondary operations, and about the same number exhibit inflammatory reaction. Extraction of immature lenses usually requires larger corneal incision, and it is more difficult to complete the toilet properly. There is also a seeming greater predisposition to glaucoma following these operations. We have no objection to the extraction of immature cataracts when the vision is reduced as stated.

J. E. COLBURN, Chicago: Yes, in patients over 60 with vision reduced below the patient's needs in both eyes. Have operated successfully at 48, 51 and 54. The form of operation to be performed depends on conditions presented. Sometimes preliminary iridectomy, sometimes the combined operation, and occasionally simple extraction. Irrigation of the anterior chamber is not employed, but dionin has been used in some of the later cases. The results in the extraction of immature cataracts have been as good as in the mature cataracts, other conditions being the same. Secondary cataracts are frequent, though inflammatory reaction from the operation is no more frequent than in the mature cases. No particular difficulties have been encountered, but it is important that the opening in the capsule be carefully and freely made. I have no objections to the operation other than those that would hold in any other form of extraction at any time.

J. T. CARPENTER, Philadelphia: Yes, in persons past 50 years of age, whose vision in both eyes has been reduced so as to interfere with vocation. Preliminary iridectomy is always performed, usually with trituration of the lens. Irrigation never used except such as occurs with the use of the ordinary dropper and normal saline solution. Believe that dionin is useful in promoting absorption of the débris. Results are rather less favorable in extraction of immature cataracts than in the mature. Operations for secondary cataracts are almost invariably necessary, while iritis is much more frequent than in the mature cases. The difficulties encountered in the operation are the failure to get rid of the transparent sticky cortex. Objections to the operation are that there are greater difficulties connected with the operation, and a greater risk of inflammatory sequelæ. These, however, should not deter one from operating when vision has become so poor as to prevent the patient from getting around easily.

J. L. THOMPSON, Indianapolis: I do not like to operate on immature cataract if I can possibly put the patient off, but have been compelled to do so in a number of cases on account of the impatience of many of my patients who have become tired of waiting from year to year. In the cases of nuclear cataract in elderly persons, I extract without an iridectomy if the pupil dilates nicely, but in those which do not, I make a small iridectomy. I find that I can press out more of the cortical substance when an iridectomy is made than I can in simple extraction. The pupils look clear immediately after the operation, and moderately so at the first dressing, but soon begin to look hazy, and in most instances months elapse before the pupil clears up. I never now resort to any ripening process except in complicated and doubtful ones, when I make a preliminary iridectomy at least two months beforehand. In these cases the lens generally ripens of itself in a very few weeks without any further interference. Occasionally in these cases I have seen an acuity of vision of 20/20, but that is rare, even though a beautiful clear central pupil was obtained. My experience teaches me that a preliminary iridectomy is the safest of all procedures for ripening the lens, even though the capsule has not been touched. I used to irrigate the anterior chamber, but have abandoned the practice, as I did not find much benefit therefrom. I have had no experience with dionin. I have not found inflammatory reaction after the extraction of immature cataracts more than in cases of ripe cataract. The only objection I have found to operations of this kind is the great length of time it takes for the eye to clear up. I have had cases last nine months, supposing that the operation on the capsule would have to be made, but as the patient could see to go about with the other eye I put the operation off from time to time, dreading as I do secondary operations after extraction, when to my surprise the patient would later come in smiling and with the exclamation "I can see," and on examination I have found a perfectly clear pupil.

A. R. BAKER, Cleveland: Yes, in those of any age when useful vision in both eyes has been lost, and the operation is not otherwise contraindicated. Preliminary iridectomy is always preferred. Neither irrigation nor dionin have been used. Results have been almost as good as in mature cases, but secondary operations are more frequent. Inflammatory reaction is no greater than in the mature cases. No special difficulties have been encountered, and I have no objection to the operation.

ROBERT SATTLER, Cincinnati: I make it a rule from which I rarely deviate not to extract immature cataract so long as the fellow eye has a fair degree of vision. I do not hesitate, however, if the fellow eye is defective, and there is an advance of the amblyopia, to do the operation with a preliminary iridectomy. Irrigation is not used, and I have had no experience with dionin. As compared to extraction of mature cataracts, the results are equally favorable, though ultimate good vision requires discission of secondary cataracts. I have no objection to the operation if the other eye is lost and functional examination and health of patient offers no contraindications.

EUGENE SMITH, Detroit: Yes, in persons 65 and upward whose vision in the eye to be operated has been reduced to counting of fingers, and vision in the fellow eye is useless or rapidly becoming so. The combined operation is preferred, though in suitable cases the simple operation is performed. Irrigation is not practiced, and experience in the use of dionin is too limited to pass an opinion as to its efficacy. Results as compared to mature cases are about the same, though secondary cataracts requiring operation are more frequent, as also inflammatory reaction from the operation. Some cortex usually remains, but this is usually absorbed in the course of time. I have no objection to extraction of immature lenses in suitable cases.

OSCAR DODD, Chicago: Yes, in persons of any age when the vision in both eyes gets so low that business is interfered with. Preliminary iridectomy is preferred, but in many the combined operation is performed. Occasionally in selected cases simple extraction is done. Irrigation of the anterior chamber is not practiced, and while dionin has been used, its effects in my practice have been questionable. Results as compared to mature cataracts are equally good, though secondary cataract requiring operation is more frequent, and inflammatory reaction is also usually greater. Operation in these cases is more difficult, because it is hard to remove all of the soft cortex. I have no particular objections to the operation, but expect a longer time in obtaining satisfactory results.

CHARLES W. KOLLOCK, Charleston, S. C.: Yes, in patients of any age in whom vision in both eyes has been sufficiently impaired so as to prevent going about, attention to business, or to seriously affect the nervous system. Preliminary iridectomy and extraction later is preferred, but the form of operation selected is the one that in each individual case seems best for obtaining good results. Irrigation of the anterior chamber is not practiced. Have had no experience with dionin. Results as compared to extraction of mature cataracts are satisfactory. Secondary cataracts requiring operation are not more frequent in my experience, though inflammatory reaction is probably a little greater. I have no particular objection to the operation.

MARK D. STEVENSON, Akron, Ohio: Yes, in patients of any age, and particularly those over 55 when there is need of the operation to restore useful vision. In those over 55 the vision in each eye should be reduced below 6/60. The combined operation is preferred, although occasionally a preliminary iridectomy is done. Irrigation of the anterior chamber is seldom practiced, but if so sterile water or physiologic salt solutions are employed. Have had no experience in the use of dionin. Results have been just as good as in extraction of mature cataracts, though secondary cataracts requiring operation are more frequent, and inflammatory reaction from the operation somewhat greater. The difficulties encountered are those concerned in the removal of the lens in its entirety. My objection to the operation is that secondary cataracts are more frequent, with attending risks of the secondary operations. I advocate the operation in those in whom the vision of both eyes is poor. If the vision of the other eye is good I do not operate unless the cataract has remained in the same state of maturity for a long time, and there is special reason for doing the operation.

C. D. WESCOTT, Chicago: Yes, in persons over 60, and have even operated on persons but little over 50 when vision in the eye to be operated on is no longer useful and vision in the fellow eye is failing rapidly. Preliminary iridectomy and extraction later is practiced in all cases of immature cataract. Irrigation is not employed, and two experiences with dionin have given doubtful results. As compared to extraction of mature cataract, results have been equally good, though discission has to be performed a little more frequently, and inflammatory reaction is also a little more frequent. I have no objection to the operation if the patient's necessities make it desirable.

F. T. ROGERS, Providence, R. I.: Yes, in patients of any age if the general health is good, and when the vision in both eyes is so poor that the person can not go about easily or safely. Preliminary iridectomy is preferred and irrigation with normal saline solution is employed when indicated. Have had no experience with dionin. Results are quite as good as in the extraction of mature cataracts, though secondary operations are more frequent, as also inflammatory reaction. The difficulties encountered are those concerned in the removal of the soft lens material. Do not object to extraction of immature senile cataracts under conditions named.

GEORGE F. SUKER, Chicago: Yes, in persons beyond 50 who count fingers faintly at 4 feet with the eye to be operated, and have about the same vision or a trifle better in the fellow eye. Preliminary iridectomy is preferred, though other forms of operation are sometimes selected, depending on circumstances. Irrigation of the anterior chamber with normal saline solution is employed, as also the use of dionin to promote absorption of débris. Results are as good as in extraction of mature cataract, though there is a greater tendency to the development of secondary cataract, and a tendency to greater inflammatory reaction, though this is not to be feared. The soft cortex is somewhat more difficult to remove. From a purely surgical standpoint I have no objection to the operation: it all depends on whether the patient is willing to wait for maturity or not, or on the time it takes the cataract to mature, even though the patient be willing to wait. Social environment is also a determining factor.

E. A. SHUMWAY, Philadelphia: I prefer to wait until the cataract is mature unless social conditions are such as to make speedy restoration of vision a prime necessity. In such cases preliminary iridectomy is of great importance. Where much cortex remains, irrigation of the anterior chamber with boracic acid solution should be used, with the precaution, especially in case of deeply set eyes, that the wound does not remain submerged in the fluid, as it collects in the conjunctival cul-de-sac. I have seen one case at least in which I thought infection took place in this way. I believe that dionin has a very decided influence in the absorption of lens débris, just as in the absorption of exudates, and that its action depends largely on the local reaction which it produces.

W. A. FISHER, Chicago: Yes, in patients of any age when the vision in both eyes is too poor for ordinary pursuits. The simple operation is invariably performed. Irrigation is not employed, and experience in the use of dionin for the resorption of lens débris has been limited. Results are just as good as in extraction of mature cataract, though secondary operations are slightly more frequent, as also inflammatory reaction. No particular difficulties have been encountered, and I have no objection to the operation.

WENDELL REBER, Philadelphia: Yes, in patients over 60 who have less than 5/25 vision in each eye. Preliminary iridectomy is invariably performed. Irrigation of the anterior chamber is not employed. The use of 10 per cent. solution of dionin is invariably a rule. As compared to mature cases, my results show a trifling

advantage in favor of the mature cases. Secondary cataracts are probably a little more frequent, and low iritis is the rule in almost all cases after extraction of immature cataracts. The presence of large quantities of cortex after the removal of the nucleus forms the element of difficulty in the operation. I have no objection to the extraction of immature senile cataracts that would not apply to any other cataracts.

E. C. ELLETT, Memphis, Tenn.: I am much in favor of operating on unripe cataracts in one-eyed people, and people with double cataract when the vision of the best eye is so reduced as to interfere with safe locomotion and keeping the patient from working generally. I always do the combined operation in all cases, and in immature cataracts, if there is no objection to operating twice, I prefer to do a preliminary iridectomy. I do not find vision much of a guide as to maturity, as some eyes with a small central opacity see very little, while others with considerable peripheral opacities see very well. I operate when the patient is seriously inconvenienced by the cataract, no matter what the age. I irrigate the anterior chamber with normal salt solution, and by the practice have usually succeeded in removing practically all the cortex, thus making it unnecessary to use dionin. I have never had any trouble arising from the extraction of immature cataracts, and unhesitatingly recommend the practice. My views on this subject have already been briefly stated in an editorial which appeared in the *Ophthalmic Record* about one year ago.

PETER A. CALLAN, New York City: Yes, in persons over 40 whose vision in the eye to be operated on has been reduced below 20/70, and whose vision in the fellow eye is reduced to 20/40. Preliminary iridectomy and extraction later is invariably preferred. Irrigation of the anterior chamber with normal salt solution is performed when indicated, and dionin to promote resorption of débris is employed two weeks after the operation. Results have been as good as in the extraction of mature cataracts, though it is longer until the eye is free from irritation. Secondary cataracts are more frequent. I have no hesitation in operating on any immature lens, providing the needs of the patient require interference.

ALLEN GREENWOOD, Boston: Yes, in persons of any age when the vision in both eyes has been so reduced that coarse print can not be easily read. The combined operation is preferred, though the simple is preferred in suitable cases. Irrigation with normal salt solution is practiced, but I have had no experience in the use of dionin. Results have been equally as good as in extraction of mature cataracts, though secondary operations were required in about 50 per cent. of the cases. There is usually somewhat more inflammatory reaction, probably due to irrigation, but this promptly subsides under proper treatment. I have no objection to the operation in suitable cases.

MELVILLE BLACK, Denver: Yes, in those cases in which the progress of the lenticular opacity in each eye is such as to cause lowering of vision beyond the useful point. If the patient has no occupation and is much inconvenienced by not being able to read, I should consider operation warranted. If a man with an occupation is no longer able to follow it because of poor vision, then his condition would warrant operation. I do not believe we are justified in requiring old people to wait for cataracts to mature if the opacification is advancing equally in each eye, because such persons may have wasted the only remaining months or years in which they might have been able to enjoy the fruits of vision obtained by operation. I prefer the simple operation, and employ irrigation of the anterior chamber with physiologic salt solution. Dionin is used a few days after the extraction to promote resorption of the débris. Results have been as good as in the extraction of mature cataracts, with about the same number of secondary cataracts requiring discission. Have not had inflammatory reaction, as a rule.

C. J. KIPP, Newark, N. J.: Yes, but not from choice, in persons of any age who as a result of lowered vision are unable to pursue occupation. The combined operation is generally preferred, though preliminary iridectomy is occasionally performed. Irrigation is not practiced and dionin has not been used. Results have been less satisfactory than in the extraction of mature cataracts, for secondary cataracts requiring operation are nearly always to be expected, and the imperfect results as to vision form a decided objection to the practice.

J. S. KIRKENDALL, Ithaca, N. Y.: Yes, in those persons whose vision has been so seriously reduced as to inconvenience them in ordinary pursuits. The combined operation is performed, with large corneal section. Irrigation is not employed, and I have had no experience in the use of dionin. In all my cases of immature senile cataract I have had good results. Have had no inflammatory reaction of any consequence, but have always been obliged to do a discission. I do not hesitate to remove an immature cataract, all things being equal, but I prefer a mature cataract if patient will wait.

H. B. YOUNG, Burlington, Iowa: Yes, in persons whose vision has been reduced so that it is difficult to get about safely. The simple operation is preferred, but combined operation sometimes accepted, depending on the nature of the case. Irrigation with physiologic salt solution is employed, but have had no experience in the use of dionin. Ultimate results compare favorably with results secured in mature cataracts. Discissions are generally required, for I prefer peripheric capsulotomy. The inflammatory reaction is no more serious than in the extraction of immature senile cataracts if conditions are otherwise good.

L. D. BROSE, Evansville, Ind.: Yes, in persons of any age when the vision in both eyes is insufficient for the patient's needs. Preliminary iridectomy is preferred, otherwise the combined operation. Irrigation is not employed, and experience with dionin is limited. Results have not been quite as satisfactory as in the extraction of mature cataracts. Secondary operations are more often required, and inflammatory reaction is more frequently encountered. The objections are that such operations not infrequently require a secondary cataract operation; are more liable to be followed by inflammatory reaction, and hence apt to have a more prolonged recovery period; and the shallow anterior chamber requires greater care in making corneal sections.

CHARLES S. BULL, New York City: Sometimes operate immature cataracts in patients over 40 years of age in whom the vision of the eye to be operated on has been reduced two-thirds or more, and vision in the fellow eye lost or practically so. Preliminary iridectomy and extraction later is preferred, and irrigation with normal salt solution is employed. Dionin is not used. Results are not quite as satisfactory as in mature cases, owing to less acute vision. Secondary cataracts develop in about 40 per cent. of the cases, though inflammatory reaction has seldom occurred. In these extractions the difficulties are in removing all of the soft lens matter, and the manipulations increase the danger of loss of vitreous. I never extract aan immature senile cataract except to help the patient's physical or mental condition, as, for instance, when the other eye is blind or useless.

HARROLD GIFFORD, Omaha: I extract immature senile cataracts only when I have to do it, i. e., when the patient needs sight and the cataract fails to mature after discission of the capsule. Age is not regarded. If the vision of the best eye gets so poor as to make life a burden, I urge a preliminary iridectomy, and in from two to eight weeks make a discission of the capsule, followed by extraction in from two to ten days. I seldom irrigate, but believe it worth while in some cases. I have not used dionin in this class of cases, but believe the indication is clear and shall try it. Results as compared to the extraction of mature cataract are not quite so good, as the vision is less acute, development of secondary cataract requiring operation, as also inflammatory reaction after the operation, are more common. My objection to the operation is the difficulty of expelling the cortex, or at least telling when all of the cortex has been expelled; hence the uncertainty as to when attempt at expulsion should cease. The cortex remaining favors infection and secondary cataract.

LUCIEN HOWE, Buffalo: I very seldom extract immature senile cataracts, as the risk is usually unnecessary, and the results from any standpoint are not very satisfactory. When I do operate on these cases I prefer preliminary iridectomy when possible to get consent for it, with irrigation with 1 to 10,000 sublimate solution if indicated. Dionin is not used. The development of secondary cataract and inflammatory reaction from the swelling of the clear lens fibers are sequelæ which form a contraindication to the operation.

MYLES STANDISH, Boston: I have had comparatively little experience in extracting immature senile cataracts, as I never operate under such conditions unless the case imperatively demands it.

GEORGE C. HARLAN, Philadelphia: I do not operate on immature senile cataracts by choice, as in these cases there is an increased liability to the development of secondary cataract, inflammatory reaction from the operation, and occlusion of the pupil. I am more inclined to do the operation in those of advanced age in whom the vision in both eyes has been reduced so that the individual is unable to read. In these cases preliminary iridectomy is preferred. Have had but little experience with irrigation, but consider physiologic salt solution the best for the purpose. Have had no experience with dionin. General results as compared to the extraction of mature cataracts are not as good.

CHARLES A. OLIVER, Philadelphia: No, for the reason that the final results are nearly always sooner or later more or less bad. In a very limited number of cases, for peculiar sociologic reasons, I sometimes operate these cases at any age, when the vision in the eye to be operated on has been reduced to finger counting, and in the fellow eye has been practically lost. In these cases combined operation is usually performed, though occasionally preliminary iridectomy followed by extraction. Irrigation, with normal salt solution through a McKeown irrigator is employed, as also the use of dionin to promote resorption of lens débris. These extractions are nearly always followed by the development of secondary cataract requiring operation, as also inflammatory reaction from the operation. The permanent ultimate vision is always better after the extraction of mature cataract.

L. WEBSTER FOX, Philadelphia: No, I do not extract immature senile cataracts, for I do not believe in taking the risk of serious secondary complications which nearly always take place and render the ultimate results unfavorable.

D. E. WELCH, Grand Rapids, Mich.: No, as there is a greater liability for secondary conditions necessitating operative work and the ultimate results are poor.

S. C. AYERS, Cincinnati: I do not extract immature cataracts if I know it. In cases where the lenses are both about equal I triturate and then extract. In cases where I have extracted lenses slightly immature I have had trouble with the cortex. I avoid this either by waiting or by triturating one of the affected eyes.

GEORGE H. KEIPER, Lafayette, Ind.: Have had no experience in the extraction of immature cataracts.

DISCUSSION.

PROF. J. HIRSCHBERG, Berlin, said that uveitis, a complication of cataract not mentioned by Dr. Bulson, is very difficult to diagnose, not only in the affected eye, but in the other as well. The views regarding operation on unripe cataract, Professor Hirschberg stated, are poetical but wrong. Physicians are told that the mature cataract is like a pea in a pod, and that when opened it pops out entire, but Professor Hirschberg's experience is that some of the cortex will remain. In unripe cataract he always advises a large opening. If the patient is more than 50 years of age cataract comes out easily. In lamellar cataract in individuals of 30 or 40 he operates without any preparation.

DR. S. D. RISLEY, Philadelphia, asked Professor Hirschberg if he would consider it justifiable to operate on a ripe cataract, traumatic or otherwise, with the other eye good, if the patient had to work among machinery, for example, where his life might be endangered because of the blind side, to which Professor Hirschberg replied in the affirmative.

DR. J. A. BACH, Milwaukee, stated that in his experience in unripe cataracts the removal of the anterior capsule is much to be preferred to the simple tearing or large section. With a good capsular forceps it is a simple matter to remove most of the anterior capsule, and by so doing we are assured of a cleaner result than can be obtained by simple section. The curling up of the anterior capsule is not always so ideal as

one could wish, and then again, lens substance often adheres with great tenacity to these curled up portions of the capsule. A gentle washing out of the anterior chamber after removal of the lens is often of great advantage and dislodges particles that otherwise would remain.

DR. WILLIAM CAMPBELL POSEY, Philadelphia, declared that ever since he has had patients to operate on he has followed Dr. Hirschberg's teachings and removed cataracts as soon as the vision in the good eye fell so low that the patient could not perform the ordinary duties of life, for he could not convince himself from what he had seen in his practice and in that of others, that it was desirable to wait until the lens had become thoroughly ripe before attempting its removal. His results have been equally as good in the removal of immature cataracts as in the removal of mature ones; indeed, he believes that if by waiting until the lens is thoroughly ripe, the cortical substance is more apt to adhere to the capsule and to occasion secondary cataracts and iritis than when the operation is performed in the immature stage. The corneal section must be large and iridectomy should be performed.

DR. EUGENE SMITH, Detroit, said in regard to operating on immature cataracts that he believes that there is altogether too much fear on the part of the operators derived from text-book teaching. When the exigencies of the case require it, there is no more objection to operating on a cataract three-fourths ripe than on one fully ripe, and not as much on those overripe. He has been in the habit for years of doing it. The question of removal of the capsule, he said, is interesting, because he always removes the anterior capsule, and for fifteen years he has advocated that procedure. There is less danger from cortical matter and better chance for absorption when the anterior capsule is removed.

DR. C. R. HOLMES, Cincinnati, substantiated what has been said with regard to removal of unripe cataracts. It has been his practice for twelve to thirteen years to remove cataracts when the exigencies of the case demanded it, even if they were only one-half ripe. He has yet to find a single case where he regrets having operated on a partially ripe cataract.

DR. ALBERT E. BULSON, JR., declared his regret that he did not have time to complete the reading of his paper, so that the part dealing with the technic of the operation, including irrigation of the anterior chamber, use of dionin, etc., could enter into the discussion by members of the Section. There is a difference of opinion as to the advisability of operating for immature senile cataract, and the manner in which the operation shall be performed when indicated. Generally speaking, the majority of the ophthalmologists whose opinions were solicited, do not hesitate to operate in these cases, and they report satisfactory results. A few prominent ophthalmologists refuse to operate for immature cataract of any description. Dr. Bulson agreed with Professor Hirschberg that it is difficult to recognize mild uveal disturbance when the lens is clouded sufficiently to make an ophthalmoscopic examination unsatisfactory, and for that reason some poor results are due to the existence of mild pre-existing intraocular disturbances rather than to any ill effects directly associated with the operative procedures. Dr. Bulson confessed that he has learned to expect a certain amount of iritis following the extraction of immature cataract. The inflammatory reaction is undoubtedly due to trauma, more especially that accompanying irrigation of the anterior chamber, but with early and continued use of atropin and dionin he has not had any difficulty in controlling the inflammation. He considers dionin a valuable remedy in the postoperative treatment of cataracts. While the effect of the drug is questionable in some cases, in the majority it has a remarkable effect in promoting resorption of the cortical remains, thus reducing the possibility of necessity of secondary operations.

Educate.—All government by the people is made better when the people come to know and feel its deficiencies. No abuse can survive long when the people have located it. When the masses know what hurts them, that particular wrong must cease.—David Starr Jordan.

A PRELIMINARY REPORT ON CELLS FOUND IN YELLOW FEVER BLOOD, WITH REFERENCE TO THEIR ETIOLOGIC AND DIAGNOSTIC SIGNIFICANCE.

DRS. O. L. POTHIER, JOSEPH HUME, F. H. WATSON AND M. COURET.
NEW ORLEANS.

A careful study of yellow fever blood has shown the regular occurrence of certain cells hitherto either unnoticed or not described, which seem to be undergoing developmental changes and which can be demonstrated in the stomach of a recently infected stegomyia. These cells are entirely extracellular, though occasionally some are seen lying on the red cells; on one occasion one was distinctly seen lying within the protoplasm of a polymorpho-neutrophilic leucocyte. They occur, as a rule, alone, though two or more may sometimes be noticed lying indefinitely grouped. They vary in size from twice the diameter of a pneumococcus to one-fourth the diameter of a red cell, and vary in shape from an ovoid to a sphere, and oft times come to a focus in a higher plane than the surrounding red cells. When stained they show, as a class, a highly granular neutrophilic protoplasm surrounding a nucleus which contains one or more deeply staining chromatine granules; the proto-

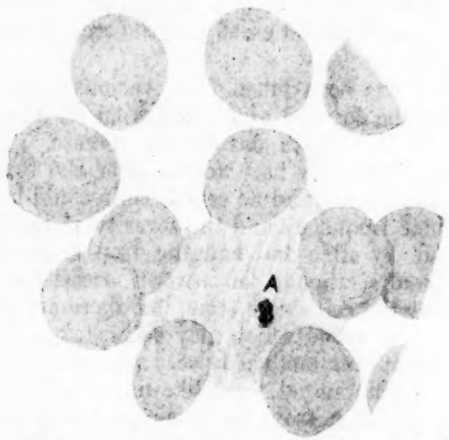

Fig. 1.—Type A, young form, surrounded by a pseudocapsule (1,300 diameters).

plasm is limited by a capsule which is of considerable thickness in the older forms.

The following forms, with minor variations, have been observed:

A. Small, deeply staining neutrophilic bodies about twice the diameter of a pneumococcus and often lying in pairs; sometimes fine chromatin granules can be made out within these; again none can be seen. This form is found chiefly and in greater abundance within the first twelve hours of the disease, and is difficult to detect, as they can be easily confused with various artifacts (Fig. 1).

B. An ovoid or pear-shaped form, with a diameter about one-sixth to one-fourth the diameter of a red cell and a width of about one-third its own length. This has a well-marked nucleus, containing chromatin granules and a narrow rim of neutrophilic protoplasm. This form has been seen in what is taken to be a budding process; again it has been seen in dumb-bell form (Figs. 2 and 3).

C. This has been found in blood taken at any time in the first three days. This form is circular or sphere-shaped and approaches in size that of a microcyte; it

has a neutrophilic protoplasm, a definite nucleus always containing several chromatin granules; the whole surrounded by a well-defined capsule (Figs. 4 and 5). It may be mistaken for blood platelets, which it resembles in size, especially when the platelets show much differentiation in staining. But the periphery of the platelets is always slightly wrinkled and irregular—never the case with the cell under description, and in the platelets any granulation which may exist is always found exactly on the periphery and never within the protoplasm.

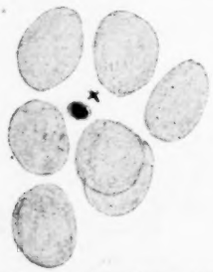

Fig. 2.—Type B. well marked nucleus, chromatin granules, narrow rim of plotoplasm (850 diameters).

D. A large cell which has a definite central nucleus surrounded by a finely granular protoplasm, which at its periphery is indefinitely limited and shows no marked capsule. This form is rare as compared with the previous ones, and is found chiefly on the second and third day (Fig. 6).

The blood has been taken from various parts of the body during the day and night, and from six hours after the onset to the eighth day of the disease. The described cells have only been found after the third day, that is on the fourth, and no relationship could be traced between their frequency and the severity of the disease. Fresh blood, by slide and hanging-drop methods, gave negative results, though on several occasions it was thought that the cells were seen; but there are so many objects in fresh blood which may be mistaken for them that at present this method is very uncertain. The examination of the spinal fluid likewise proved negative. In specimens taken from the same patient at the same time one slide may often be negative, while all the

Fig. 3.—Type B, slightly older form than Fig. 2 (900 diameters).

others are positive; this is probably due to the scarcity of the cells in the peripheral blood, for it is unusual to find more than four or five cells to a whole slide even after a three- or four-hour search, and it is exceptional to find as many as twelve in a single slide. It is easy to overlook them and much time has to be given to each specimen before it can be called positive or negative.

Fifty-two slides of yellow fever blood taken in the first three days were examined, representing thirty-five separate cases. The described bodies were found in all of these save three. Two of these negative slides were duplicates of positive ones, and in the third malarial organisms were found, and clinically the case was indefinite. Many other slides taken on the fourth to the

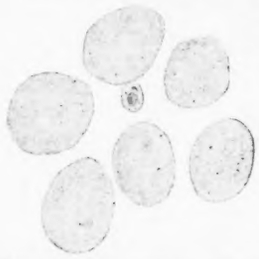

Fig. 4.—Type C, deep staining nucleus, narrow rim of protoplasm surrounded by a definite capsule (850 diameters).

eighth day of the disease, inclusive, were examined with negative results, except once, when the cells were found on the fourth day.

These cells are very poorly and indifferently stained

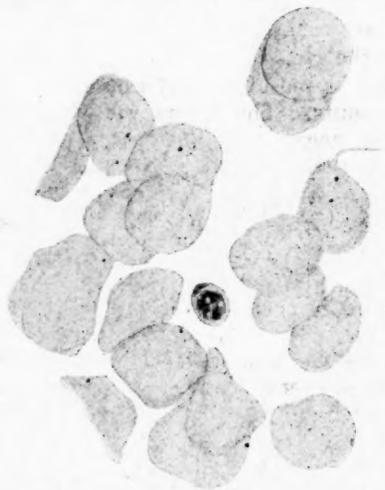

Fig. 5.—Type C (1,300 diameters).

by the usual methods. With Wright's, Erhlich's triacid, eosin and methylene blue, etc., they are but feebly stained and their detection difficult. After trying many stains, the following was found to give almost perfect

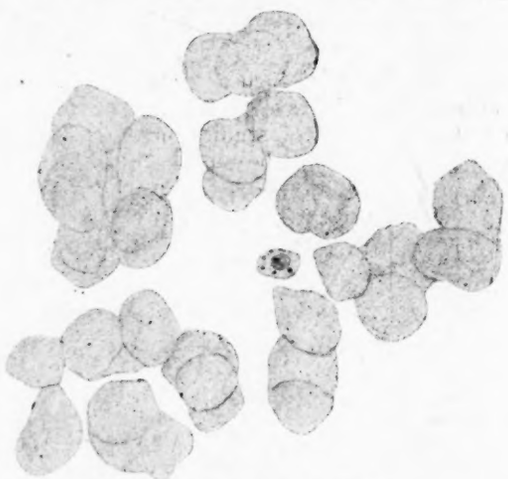

Fig. 6.—Type D (850 diameters).

results: The blood was fixed by immersing the slide in methylic alcohol for two minutes, after which it is air dried. It is next stained with Delafield's hematoxylin for three minutes, acid alcohol till reddish-brown, am-

monia water till blue, wash with water and stain for fifteen minutes with an aqueous solution of eosin. 1-1000, wash and dry and clear with oil of cloves and mount. A quicker method gives almost as good results, viz., after fixing stain with 0.5 per cent. eosin in 50 per cent. alcohol for one minute, wash and stain with Delafield's hematoxylin for three minutes, clear, dry and mount.

With this method the nucleus stains deeply and shows two to four chromatin granules; the protoplasm stains a light bluish-pink and is surrounded by a definite membrane which is more deeply stained. In this well-defined limiting membrane a rather large, deeply stained spot, situated in one pole, can often be made out, often accompanied by several smaller ones.

Every effort has been made in this work to avoid sources of error. The stains have been filtered, sterilized and examined with negative results for similar bodies. The slides and the skin of the patients have been likewise carefully cleaned, and as control 100 specimens of blood have been examined, taken at random from patients in the Charity Hospital. Thirty-five of these were stained by the same technic as that employed for yellow fever blood and most carefully examined with absolutely negative results. The others were stained by all the methods in vogue and with negative results. Four slides from yellow fever cases which were taken in Vera Cruz, Mexico, during the epidemic of 1902, showed the same bodies. Again, seven numbered slides which were submitted to us for examination were correctly diagnosed; four were from yellow fever cases on the second or third day, two from each case and three from other diseases. One yellow fever slide was alone miscalled as negative, but its duplicate was correctly stated to be positive. In several instances plasmodia malaria were found in the blood of patients ill with yellow fever, controverting the opinion that the two infections can not occur together.

Stegomyia raised from the egg and fed on normal humans or bananas and some which were not fed at all, but allowed to bite patients a few days after birth, showed in smears made from blood obtained from the stomach, the same bodies which we have previously described as occurring in the blood of yellow fever patients. In mosquitoes examined later than nine hours after feeding we could not demonstrate these bodies owing to the partial digestion of the blood. Mosquitoes raised at the same time, fed only on normal individuals and examined at the same interval of time showed no such bodies. Results of studies on mosquitoes at later periods of infection will be reported later.

We wish to thank the officers of the Isolation Hospital for the facilities they have given us; also the house surgeon and internes of the Charity Hospital for their interest and aid in following the cases.

Medical Group in Parliament.—The numerous physicians who are members of the French senate or house of deputies, for ten years have been in the habit of meeting apart to discuss measures affecting the public health, etc., before legislating on them. Italy has also a large proportion of medical men in its parliament, and they have recently organized in the same way. In order to become better posted on certain subjects they have issued an appeal for the holding of a special congress of physicians in the state employ, sanitary officials, pharmacists and veterinarians, to confer with the physicians in the legislature in regard to legislative matters. The physicians in the senate style their group the *"fascio medico parliamentare."*

Special Article

IMMUNITY.

CHAPTER XXVI.

PLAGUE.

Plague was known in the second and third centuries. In the sixth century it ravaged the Roman empire and destroyed half the population in the eastern provinces. Under the name of the "black death" it swept over Europe in 1347-50 with a sacrifice of one-fourth of the inhabitants—about 25,000,000. During the fifteenth and sixteenth centuries many epidemics prevailed in various parts of Europe, and the disease seemed to have fastened itself on that part of the world. It seems, however, that the pneumonic form, the most contagious, gradually became less common, or the virulence of the infection diminished, and this, with the institution of quarantine regulations, decreased the prevalence of the disease during and following the seventeenth century. Nevertheless, there have been occasional outbreaks in Eastern Europe since that time. Since the recrudescence of plague in Hongkong in 1893 and in other places later, the disease has been subjected to modern methods of scientific study, its cause has been discovered, and the importance of rigid quarantine measures at seaports in preventing universal extension of the disease has had practical tests.

In the Hongkong epidemic of 1893-4 Kitasato and Yersin, working independently, discovered the bacillus of plague, *Bacillus pestis*. The organism measures from 1.5 to 1.75 microns in length, 0.5 to 0.7 in breadth, is of long oval shape, typically, but presents many variations in form both in the body and in cultures. It may appear as a short oval (coccus form), or as a longer rod; and distorted and swollen, vacuole-like cells (involution or degeneration forms) are commonly met. The longer the disease has lasted, or, on the other hand, the older the culture, the more numerous are the atypical forms. In bouillon long chains develop. A knowledge of this pleomorphism is important from the standpoint of diagnosis. It is placed with a number of other organisms which cause hemorrhagic septicemias in animals, the members of which comprise the "group of hemorrhagic septicemia." Like some of them, the two ends of the bacillus stain more densely than the central portion with methylene blue, dilute carbol fuchsin and other dyes (polar staining). It does not stain by Gram's method. A capsule may be demonstrated by appropriate technic. The organism has no independent motility and probably possesses no flagellæ. Spores are not formed. It may be cultivated from the blood, organs, bubos, sputum, stools and urine of patients (or animals), on agar, gelatin, bouillon or blood serum which are of neutral or slightly alkaline reaction. On agar in certain respects it resembles the influenza bacillus, and confusion with this orgainsm is possible in cultures made from the sputum. Its appearance on gelatin and bouillon are more or less characteristic. In the latter medium the so-called "stalactite" growth occurs, in which visible processes extend from the surface toward the bottom, where they meet other processes which extend toward the surface ("stalagmites"). These formations utilize as their starting points the sides of a flask or drops of butter or oil which are placed on the surface. Certain other organisms grow in a similar manner. It is said to be a characteristic feature of the plague bacillus that many involution forms appear on agar which contains 3 per cent. of sodium chlorid. The optimum temperature for growth is from 25 to 30 C., which is somewhat lower than that for most pathogenic organisms. It grows rather slowly even under the best conditions. In mixed cultures it is overgrown by more rapidly growing saprophytic organisms (e. g., colon bacillus), although little antagonism exists between them. It may live for from four to seven days in the putrefying organs of man or animals. Its virulence may be retained in the cadaver of a rat for two months (Bandi and Stagnitta-Balistreri). During this time the organisms penetrate all the tissues of

Characteristics of the Organism.

Polar Staining.

Involution Forms.

the body, even growing through the skin. It may live in the pus of a bubo for twenty days when unmixed with other organisms (Albrecht and Gohn); in the sputum from plague pneumonia for ten days; in various foods, as milk, potatoes, for one to three weeks; in water from five to twenty days, depending on the number of saprophytes which are present; in earth from two weeks to three months, depending on the quantity of organic matter and other organisms. In all these instances the higher the temperature, i. e., above 30 C., and the more numerous the saprophytic organisms, the shorter is the life of the plague bacillus. In winter, when contaminating saprophytes grow less rapidly, the plague bacillus lives longer.

Resistance.

The resistance of the organism to desiccation, sunlight and disinfecting agents is rather low, particularly when the surrounding temperature is above 30 C. In temperatures of from 29 to 31 C., when thoroughly dried, it rarely lives longer than from six to seven days, whereas at lower temperatures, 16 to 20 C., cultures may be obtained after from one to several weeks, depending on the material which contains the organisms. It lives longer in woolen and cotton threads (clothing) than when isolated as in dust; hence, dust infection is improbable (Dieudonné). In sputum (plague pneumonia) and purulent exudates in which the bacilli become incrusted to a degree, life may persist for from three to four weeks. Sunlight kills them in from two to six hours, depending on the temperature and the proximity of the organisms to the surface. Although cultures for the purpose of vaccination have been killed at a temperature of 65 C. for one hour, precautions to insure an even distribution of the heat are necessary to render certain the death of all organisms. 100 C. kills them at once, and 80 C. in from five to ten minutes (moist heat). It is very resistant to cold, remaining alive at a temperature of —20 C. for several weeks, even when repeatedly thawed out during this time. It even proliferates slowly at from 4 to 7 degrees C.

Virulence and Toxins.

Cultures of the plague bacillus retain their virulence over a long period when kept in a cool dark place, and when not allowed to dry. However, they often lose in virulence unaccountably. The nature of the toxic substance is as yet obscure. A concentrated soluble toxin has never been obtained in cultures. Filtrates of young cultures show little or no toxicity, whereas in older cultures the fluid becomes more or less toxic (liberation of endotoxin?). Lustig and Galeotti extract cultures with 0.75 to 1 per cent. potassium hydroxid, from which they precipitate a toxic substance with acetic or hydrochloric acid. Markl found the cell bodies to be very toxic after eight weeks' growth at room temperature, provided the organisms were killed by chloroform rather than by heat; killing by heat destroys the toxic substance largely. He believes some metabolic product of the organs is the chief toxic constituent, claiming at the same time the presence of a certain amount of soluble toxin.

Virulence for Animals.

The plague bacillus is exceedingly virulent for rats, guinea-pigs and monkeys; somewhat less virulent for mice; other animals, cats, dogs, swine, cows, horses, sheep, goats, may be infected artificially, although they commonly recover even after large doses. Rats and guinea-pigs may be infected by subcutaneous, intraperitoneal and intravascular injections, by the feeding of infected material or by placing it on the nasal mucous membrane or in the conjunctival sac, and by inhalation experiments, the last method commonly resulting in plague pneumonia. Guinea-pigs die of plague septicemia in from four to five days when cultures or material containing the organisms (sputum, feces, organs from plague cases), are rubbed into the shaven or even unshaven skin (Albrecht and Gohn). This experiment is of value for the detection of virulent plague bacilli and is a convenient means of separating them from contaminating organisms. Following inoculation into a cutaneous or mucous surface a local reaction of varying intensity develops in which the subcutaneous tissue becomes edematous or even hemorrhagic, in a number of hours the regional lymph glands become swollen and hemorrhagic, and in from two to five days the animals die in a condition of plague septicemia. Cultures of low virulence not infrequently cause a chronic infection which is characterized by the formation of large granulomatous nodules on the surface of the liver and spleen, and in the omentum. Such foci contain many plague bacilli, and the death of the animal results in a few weeks from intoxication or from general infection. Although rabbits are much less susceptible than rats or guinea-pigs, young animals succumb to cutaneous inoculation.

Endemic Plague.

Dieudonné cites four foci in which plague is known to be endemic at the present time: One is in China (province of Yünnan), from which the Hongkong epidemic originated; a second in the Himalayas, which led to the outbreak in Bombay; a third in a mountainous region south of Mecca, and a fourth was found by Koch and Zupitza in British East Africa near the source of the White Nile.

Plague in Rats.

The opinion is held by many that plague is primarily a disease of the rat and that certain regions remain pest-infected over a long period because of this fact. It is known that rats often suffer from a chronic form of the disease, and it is possible that the organism at times acquires increased virulence, as a consequence of which the infection becomes widespread and rapidly fatal among these animals. It is probable that the chief method of transmission from rat to rat is through the eating of plague cadavers by healthy animals. The possibility of transmission from one animal to another by means of fleas is upheld by some. It has been shown that the blood which they ingest from an infected animal may contain bacilli, but transmission to other animals by this means is still disputed.

The means by which the disease extends from rat to man are not definitely determined. This much is known, however: First, that the bacilli are excreted in the urine and feces of infected animals; and, second, that the disease attacks those especially who live in dark, damp, filthy quarters in which rats are numerous. A great mortality among the rats not uncommonly precedes an outbreak of plague in man. Europeans who live under hygienic conditions in plague infected districts do not often contract the disease. It is suspected that the existence of "plague houses" may depend on the prevalence of the disease among the rats which infest the houses. On the other hand, the organisms excreted by a plague patient through the sputum, urine or feces, find in the conditions described above, surroundings which favor their prolonged life; hence, the occurrence of subsequent infection in the same house in many instances may be traceable to a previous case.

Plague Houses.

Fleas.

The theory has been advanced also that fleas may be an important means of transferring plague from rats to man. This is objected to on the ground that every animal has its own peculiar flea and that the flea of the rat will not bite man. Nevertheless, it may alight on the skin of man temporarily and there discharge bacillus-laden excretions. Flies in a like manner may distribute the bacilli from rats or the infected excretions of man.

Epidemics.

Epidemics of plague lack the explosive-like suddenness in their development which characterizes cholera and to a certain extent typhoid and dysentery. The cases occur in groups and in particular houses in such a manner that direct and indirect contact seems to be largely responsible for its extension. Every epidemic of plague may be divided into three stages: a slow progression from small centers, an acme of widespread death and a slow recession (Dieudonné). It seems probable that the disease spreads rapidly and extensively only when the pneumonic form prevails. In this instance infection by direct contact may occur through the inhalation of dried sputum or of infected drops of sputum or saliva directly from the patient. Even in ordinary speaking minute drops of saliva are thrown into the air. In the pneumonic and septicemic forms, the infected urine and feces contribute to the dissemination of the organisms. Transmission by indirect contact, as by infected clothing and linen, has been noted in many instances. Compared with pneumonic and septicemic plague the bubonic form is much less dangerous to a community.

When plague invades a new country it commonly makes its first appearance in coast cities. Presumably this is accomplished through infected rats which may board a ship during its stay in a pest-ridden harbor, and which subsequently escape at the new port.

Infection Atria.

In man infection takes place through the skin most frequently, although the mucous membrane of the mouth, nose, pharynx, tonsils or the conjunctiva are possible infection atria. Often no local reaction is produced, and the point of entrance may be indicated only in a general way by the swollen lymph glands of the region. Infrequently a pustule or small carbuncle marks the point of entrance. Primary plague pneumonia is caused by the inhalation of pest-laden material, particularly fine particles of sputum from a pneumonic case, and perhaps also by the inhalation of infected dust; the latter is probably of less importance because of the short life of the organism in dust. Infection is thought not to occur through the stomach or intestines.

The incubation period is commonly from three to five, and not longer than ten days.

Following cutaneous infection the regional lymph glands become swollen and hemorrhagic, and undergo more or less extensive necrosis. When the infection extends beyond the lymph gland the blood may contain enormous quantities of bacilli (plague septicemia), and the same condition follows plague pneumonia; in the event of general infection death follows in a few hours. "Secondary pneumonia" and also "secondary buboes" develop as a consequence of blood infection. Hemorrhages into the mucous membrane (especially the stomach or cecum), endothelial surfaces (pericardium), and various parenchymatous organs, with extreme degeneration of the latter (liver, kidneys and heart), are characteristic anatomic changes. The spleen is usually swollen. The toxic substance evidently has affinities for many tissues.

Mixed infection with the streptococcus is not uncommon and is a serious complication.

Prophylaxis.

The principles of prophylaxis rest: 1, In an early bacteriologic diagnosis by microscopic and cultural examination of blood, sputum and fluid taken from a bubo either by a syringe or after incision; 2, in the thorough isolation of patients and of those who have been exposed to infection; 3, in the disinfection of excretions, of clothing and of infected houses, which in some instances may mean the destruction of the latter; 4, in the destruction of rats; 5, prophylactic injections. Up to the present time the most effective measure of getting rid of rats is to offer a bounty for each animal caught.

Vaccines.

The vaccine of Haffkine has been used extensively in India. The Indian plague commission found that the incidence of disease and mortality were lower among the inoculated than the uninoculated, although many of the inoculated contracted the disease in a comparatively benign form. The vaccine consists of bouillon cultures which have grown for six weeks with stalactite formation (see above), then killed by exposure to a temperature of 65 C. for one hour; from 0.5 to 3.5 c.c. are injected, according to the age and size of the individual. One or more subsequent injections may be given. The local and general reactions are of moderate severity. Protection becomes manifest only several days after the inoculation and may persist for many weeks or months. The vaccine recommended by the German commission consists of two days' old agar cultures which have been killed by heat (65 C. for one hour). Lustig and Galeotti utilize the toxic precipitate described above as a vaccine. Terni and Bandi inoculate rabbits or guinea-pigs intraperitoneally with the plague bacillus and after or just preceding death collect the peritoneal exudate, in which the organisms are allowed to proliferate still further for twelve hours. The bacilli are then killed at a low temperature, and this fluid, after an addition of a preservative, constitutes their vaccine. Although the last three vaccines have proved of value in animal experiments, they have not as yet been used extensively in man.

Besredka, also Shiga, recommend the use of mixed active and passive immunization, already referred to under typhoid and cholera, in this instance naturally using plague bacilli (killed) and anti-plague serum. Shiga reported good results by the use of the combined method in the epidemic in Kobe.

Immunity.

The immunity which is produced by protective inoculation, like that which follows natural infection, is considered to be antibacterial inasmuch as the serum acquires increased bactericidal power for the bacillus, but shows no ability to neutralize its toxic constituents. As in relation to many other infections, however, we are not in position to ignore the possibility of an increased phagocytic power on the part of the leucocytes. The immunity which follows infection is of long duration.

Serumtherapy and Prophylaxis.

Prophylactic injections of antiplague serum produce a temporary immunity of about two weeks' duration. The Pasteur Institute prepares the serum of Yersin by immunizing horses first with killed and then with living cultures. The immunization is difficult and from several months to a year and a half are required for the production of a strong serum. When the blood is drawn eventually its freedom from living plague bacilli and from toxic substances must be assured. The immunizing value of the serum is determined by that quantity which will save a mouse from a fatal dose of living plague bacilli, the serum being given twenty-four hours in advance of the culture. This is accomplished by 0.1 to 0.02 c.c., depending on the strength of the serum. Its curative power is estimated from that quantity, 0.5 to 0.1 c.c., which saves a mouse when administered sixteen hours after the injection of an otherwise fatal dose of culture. For protective inoculation in man from 10 to 20 c.c. are recommended, and for curative purposes from 30 to 50 c.c. Concerning the value of this serum Dieudonné concludes as follows: "On the basis of the results obtained in man and in animal experiments we can attribute no positive curative value to the Parisian serum, although a certain influence on the course of the disease can not be denied. On the other hand, the serum is suitable for protective inoculation when immediate immunity is necessary, as for those who are caring for cases of plague pneumonia. Since, however, the protection afforded by this means persists only for a few days, subsequent active immunization with killed cultures is indicated as soon as possible for those persons who are exposed to infection for some time." The favorable results noted by a number of observers would seem to justify further use of the serum for curative purposes.

The serum of Tavel, prepared at the Institute of Bern, is, like that of Yersin, bactericidal and agglutinating. Antitoxic as well as bactericidal properties are claimed for the serum of Lustig, which is prepared by immunization with the toxic precipitate mentioned above. It has been used extensively in the treatment of plague and in a number of small epidemics favorable though not thoroughly convincing results were reported. The serum of Markl, which is supposed to be antitoxic, has had no practical trial. It is prepared by immunization with old cultures which have been killed by chloroform.

Agglutination.

Although the serum of patients acquires a certain agglutinating power, it is rather low (1/3 or 1/5), and does not become manifest until during the second week of the disease. Before this time diagnosis by clinical or bacteriologic means can be made with certainty, hence for clinical diagnosis the reaction has little value. On the other hand, a strong artificial agglutinating serum obtained by the specific immunization of animals is of great value for the identification of the plague bacillus when cultures have been obtained from suspected cases. Artificial serums may agglutinate in dilutions of from 1/1000 to 1/6000.

The protective power of vaccination was strikingly shown in the case of a nursing mother who contracted confluent smallpox; she was taken to the hospital with her seven months' baby. The infant had been successfully vaccinated fourteen days previously; it was not weaned, but was nursed by the mother throughout her illness, and was handled daily by about fifty other patients in various stages of smallpox; it left the hospital in perfect health.—H. J. Neilson, in *Brit. Med. Jour.*

Clinical Notes

AN UNUSUAL GONORRHEAL COMPLICATION.

JAMES A. NYDEGGER, M.D.
United States Public Health and Marine-Hospital Service,

Patient.—A young Swede, aged 21, of fair habits, who could not recall having ever before been ill, was admitted to the Marine Hospital, New York, June 14, 1905, with the following history:

History.—Having arrived in port after a somewhat prolonged voyage, he, in company with a number of his shipmates, visited numerous sailors' brothels in lower New York. The result was that a few days later he developed gonorrhea. There was a discharge from the meatus, and a short time after the discharge appeared he noticed a soreness in the right groin, on account of which he applied for relief.

Examination.—This showed, in addition to the discharge, a slight enlargement and tenderness of one or two of the superficial inguinal glands on the right side. Temperature and pulse were normal.

Treatment.—Rest in bed, a restricted diet, alkalines administered internally, an ice bag applied over the tender glands and a 1 to 4,000 solution of permanganate of potassium for irrigation of the anterior urethra were prescribed.

Result.—His discharge ceased in about a week, and the pain and swelling of the lymphatic glands almost subsided. The patient was able to be about in the ward. The urethral irrigation was continued.

Subsequent History.—On June 25, following a feeling of chilliness, there was elevation of temperature, and on June 26 the temperature went up to 39.8 c.; pulse was 84. He complained of chilly sensations at intervals. Irrigations were discontinued, and cold sponges were ordered to reduce temperature. The temperature took a downward course for three days, but did not reach normal.

On June 29 a tumor mass the size of a small hen's egg was made out above Poupart's ligament almost at the ilium. The tumor was painful on pressure, and it continued to increase in size. The mass could be fairly well palpated on deep pressure. There was doubt as to its nature and more doubt as to its exact location, whether it was intraperitoneal or extraperitoneal.

Blood Examination: This showed a leucocytosis of 16,300, and a differential count (500 cells) gave 75.5 per cent. polymorphonuclear cells. The temperature curve indicated also a rather severe infection.

Operation.—Under ether, an incision was made about an inch above and parallel to Poupart's ligament. It was about four inches in length, and extended well out over the anterior superior spine of the ilium. The peritoneum was reached, and being adherent to the mass, was pushed upward and backward with some difficulty. Following back between the mass and the peritoneum carefully, the mass was found to consist of a number of lymphatic glands closely surrounding the external iliac vein and artery, and bound together by their surrounding inflammatory tissues. The glands contained many foci of suppuration.

Owing to the depth of the involved glands and to their close connection with the large blood vessels, they were not wholly removed, for fear of wounding the vessels. A blunt-pointed probe was pushed into the glands in many directions, and subsequently they were broken down by the fingers and partially removed. The wound was packed with plain sterile gauze and left open. The portion of the glands left behind at the time of the operation and adherent to the vessels, subsequently sloughed away gradually, and the wound healed by granulation. The patient was discharged in early August.

Remarks.—The case is reported because of the apparent great rarity of such complication occurring in the course of an attack of gonorrhea. There was reasonable doubt before the operation as to the nature of the mass; there was also more doubt as to its location. It was difficult to say whether it was inside the abdominal cavity or outside the peritoneum, owing to its close proximity to that membrane. In its growth the mass had pushed that part of the peritoneum extending over it, upward. The necessity for the operation was indicated by the septic pulse curve, the degree of leucocytosis and the high percentage of polymorphonuclear cells in the blood. With a suppuration due to a highly virulent organism in the lymph glands surrounding the iliac vessels, there is considerable danger of rupture of the glands through the peritoneum into the general abdominal cavity, with a resulting peritonitis.

Dr. C. H. Lavinder of the Public Health and Marine-Hospital Service, in whose ward the case developed, first called my attention to it in consultation. The case was seen together a number of times and the opinions were divergent. Of course, there was always borne in mind the probable cause for the occurrence of the tumor.

In a rather extensive search of the literature of gonorrhea and its complications, I have been unable to find a single reference to a complication of this nature occurring in this location. I assume, therefore, that it is of rare occurrence. A glandular involvement of lymphatics of any nature in the course of a gonorrhea in the male is of rather infrequent occurrence, and then the superficial inguinal glands are the ones involved. Doubtless in the course of a gonorrhea other pus-producing organisms than the gonococci gain access to the lymph glands supplied from the genitalia, although these latter are capable of exciting violent inflammation. No other organisms were looked for in this case.

A CLINICAL CHART FOR THE RECORDS OF PATIENTS IN SMALL HOSPITALS.*

GEORGE F. WILSON, M.D.,
PORTLAND, OREGON.

In very many of the smaller hospitals throughout our country, a great deal of good work is done, and there is no question but that a careful record of this would prove useful, instructive and of benefit to science if it could only be observed in an accessible form.

Aside from the strictly scientific aspect of the matter, reference to the progress of a patient during a sojourn in a hospital becomes frequently important in a legal way, as a means of substantiating or refuting claims for damages, and as a groundwork on which an expert witness may base an opinion. Witness for instance the case of an individual with marked asymmetry of the chest wall, who claimed that his existing disability was largely due to his having his ribs crushed in a railroad train wreck. His hospital record showed no variations in pulse, respiration or temperature during the nineteen days immediately following the accident, yet had the case not been settled out of court, there were witnesses ready to swear that the deformity was not present before, and therefore must have been caused by the accident. In many such ways can the value of a careful record be shown.

Owing, however, to the small clerical force and the manifold duties of the resident staff in our smaller hospitals, but little time can be found for copying histories, even though they are taken carefully. The work is not instructive, or interesting to a student of medicine, and as I know, from my own personal experience, will be neglected if there is any possible way to do so. Excuses will always be found, or made, to shirk the work, consequently, unless such records can first of all be made in the simplest possible shape and afterward be preserved in the original form, they will be lost forever. A hospital, like any business, must keep a system of books, making a certain amount of clerical work a necessity, and after the admission of a patient, as a part of the business of the institution, there must be a method of showing what changes of rates are brought about by a transfer from ward to room, or vice versa, and what expense has been incurred in the way of operation, etc.

With the view of avoiding any repetition and simplifying the work as far as possible, to each patient, on admission, is

* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

allotted both a card and this chart on which are blank spaces for his number, name, date of admission, address, age, civil condition and occupation, religion and nativity, also the number of his room or ward, with the additional information on the card as to page of ledger, address of nearest relative, name of his physician, name of order or fraternity of which he is a member, and name of individual or corporation responsible for him. The card is kept at the office for the business part of the transaction, becoming, if deemed proper, an index to his chart when filed away, and an index to his ledger account. The chart is given to the nurse in charge of the patient. On the obverse of the sheet, immediately beneath the so-called pedigree, is a space for the diagnosis and name of attending physician or surgeon. Beneath this is recorded, under separate headings, any operation performed, with its date, the

GOOD SAMARITAN HOSPITAL.
CLINICAL HISTORY.

No. . . . Name . . . . . Admitted . . . . . .
Address . . . . . Age . . . . Civil Condition . . . . . .
Occupation . . . . . Religion . . . . . Nativity . . . . . .
Room No. . . Ward No. . . Transferred to. . . . . Date . . . . .
Diagnosis . . . . . Dr. . . . . .

Operations . . . . . .
Date . . . . . Operator . . . . . Assistant . . . . . .
Anesthetic . . . (Total time) . . Amount (for Narcosis) . . . (Total) . . .
Anesthetizer . . . . . Sutures (deep) . . . . . (Superficial) . . . . . .
Drainage . . . . . Sutures removed . . . . . Infection . . . . . .

Family History
Previous History
Present History
Examination

BLOOD EXAMINATION
- Hemoglob %
- Whites No.
- Reds No.
- Stained Prep.

URINALYSIS
- Reaction.
- Spec. Grav.
- Albumin
- Sugar
- Phosphates
- Urates
- Crystals
- Blood
- Pus
- Casts

Results: . . . Cured. . . . Improved. . . . Unimproved. . . . Died. . . .
Discharged. . . . . .

[The top of the reverse side is as follows:]

BEDSIDE NOTES.

Name Room No. Ward No.

Date | Hour | Temp. | Pulse | Resp. | Urine | Stools | Treatment | Diet | Rem'ks.

[The remainder of this page of the chart is ruled off in columns under the above headings.]

name of operator and assistant, the kind of anesthetic, total time, amount for narcosis, and total amount, and name of anesthetist, the kind of sutures, both deep and superficial, date of their removal, use of drainage and results as to infection. Below this, under the headlines, "Family History," "Previous History," "Present History," and "Examination," are spaces for recording these facts. Sufficient space to the right of this is reserved, under separate headings, for the results of blood examination and urinalysis. Near the lower margin are the results as to cure, improvement or not, with date of discharge or death. On the reverse side, under the caption "Bedside Notes," the sheet is so ruled as to give a space for a morning and evening record of pulse, respiration and temperature, a daily record of bowel and bladder function, diet, treatment, and remarks on the progress of the case. A sufficient margin is preserved on both sides for binding in book form, or with perforations to form a portfolio. Under bedside notes, one sheet will accommodate a stay in hospital of about one month: should, however, the sojourn be prolonged, additional sheets of these notes, with both sides alike, are provided for a continuation of the history, all being bound together when finished.

It becomes the duty of the nurse in charge to fill in the bedside notes, to copy, from slips furnished by a member of the house staff, the results of the urine and blood examinations, to fill in the space recording any operation and its results; furnishing to the office, on a slip provided for the purpose, the nature of the operation that proper charge be made, also the record of any transfer from ward to room, etc. To a member of the house staff is allotted the duty of taking the history of the individual directly on the chart.

When the case is finished, the chart is returned to the office and the attending physician or surgeon is asked to enter the diagnosis and append his signature.

The chart is put away and the card which was furnished the clerk, filed in card form, as an index of the patient's name and number, or an index may be kept in a book provided for the purpose, together with another of the disease, so that either may readily be referred to.

The accompanying reproduction of the chart shows the wording, but not the space. The chart itself is 11 by 15 inches. While not claiming that either the chart or the methods employed are in any manner perfect, they are offered as a means of bringing some order out of chaos, and for suggestions as to improvements.

DISCUSSION.

DR. E. S. WRIGHT, Salt Lake City, said that the size of the chart is a matter of some importance in handling and one to which he would find some objection. If only that part of the sheet were used below the lower line it seems to him that it would be better. He has used a form of chart similar in width and length for recording in a private hospital. The space for diet needs to be enlarged while that for remarks may be lessened. It is a very essential matter to specialize in the dietary. These are the objections he would offer to the use of such a large sheet. He prefers to take the material on the side giving clinical history, and an independent piece of paper, say a blue print containing the clinical history, having the two uniform in size.

DR. HARRY M. SHERMAN, San Francisco, said that the principal objection in his mind is the fact that in these records one has to write on both sides of the sheet, and he thinks this will prove to be a very decided drawback, as it is customary when papers have to be filed together that only one side should be used. Apparently the history is not kept by the chief, but by an assistant. Dr. Sherman finds it useful to have kept with the records of each case a special sheet which is his and on which he can jot down observations himself. This always stays with the history and is bound up with it, so that when he goes back over the records of cases he can find his own individual expressions of opinion, which are much more intelligible to him than those put down by others. This sheet is of a separate color and he considers this a practical point. Another objection is having the space so ruled as only to allow a certain amount of space under each heading. Some things can not be kept in a given space, and a patient's condition may call for space which should be limited only by its own needs. He considers that in this respect the chart is a little too mechanical.

DR. G. A. WILSON declared that Dr. Wright's objections are good. These charts are not kept at the patient's bedside, but in a separate room, and the top of the chart is grasped by a clip. The difficulty of writing on either side is important, and a great objection is that the house surgeon, when taking the history of the case, often soils the sheet. Dr. Wilson said that Dr. Sherman evidently must have reformed, as they were in Bellevue Hospital together and he used to have an old convalescent take his histories for him, but now, apparently, he takes them himself. Dr. Wilson said that he did not present the chart as a perfect specimen, but only to get suggestions. He has often been annoyed and embarrassed when he wanted a history and it could not be found.

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THE INDIVIDUAL AS A FACTOR IN INFECTIOUS DISEASES.

One of the characteristics of medical opinion which can be traced through the literature of all ages is its tendency to run to extremes. From a period of excessive bleeding and purging we react to a period of practically no bleeding and mild purging, and instances of a similar character could be multiplied indefinitely. Sometimes the complete abandonment of an old method or idea is due to discoveries which indicate its fallacies; more often the change is due to the influence of some one man or group of men who change the fashion, for there are fashions in medicine as well as in spring bonnets. Again, a medical theory may be so attractive and so plausible from certain points of view that, for the time being, it hypnotizes us into forgetting or minimizing the other points of view. A recent article of Ewing[1] suggests that we have been so hypnotizing ourselves with certain aspects of the bacterial theory of infectious diseases.

In bacterial infections, what we call the disease is the expression in symptoms and signs of a struggle which is taking place between the invading bacterium and the invaded individual. The general tendency of the profession, ever since bacterial diseases came into prominence in the last quarter of the preceding century, has been to lay too much stress on the rôle of the parasite, and too little on the rôle of the host, in analyzing the factors producing the disease. This tendency, though widespread, has not been universal, for there have always been those who championed the cause of the individual. We remember, for example, that Maurice Letulle, in his classical work on inflammation, suggested that we should speak of pyogenic individuals rather than pyogenic cocci.

It is in the class of infections represented by typhoid fever that we find the greatest difficulty in explaining all the changes from the point of view of bacterial action alone. The typhoid bacillus typifies a class of bacteria to which most pathogens belong, and in which the disease-producing toxins are not excreted as in diphtheria, but are set free only when the enclosing cell is damaged. Thus in typhoid fever we see at an early stage of the disease a bacteriemia, but as the disease progresses, even in unfavorable cases, the bacteria gradually disappear from the blood, and in favorable cases the disappearance is complete. In the production of immunity from diseases of this class this destruction of the causal bacteria is all-important, for it is found that immunity can not be produced by the injection of filtrates of the cultures, but that the bacterial cells must be introduced also. During the destruction of the bacteria, certain poisonous products are set free, and, though we know but little of their composition in many instances, enough has been discovered to lead one to surmise their nature and effects. Vaughan has expressed the opinion that the bacterial cell is a chemical compound of definite composition. From the colon bacillus he has isolated a variety of chemical groups, among which nuclein, amido and carbohydrate groups are most important. These substances exert an intensely irritating local reaction, and evidently produce a cumulative poisonous effect on the body cells, as apparently no real immunity to them is developed. It seems probable that, like other poisonous proteids which do not cause immunity, they must be disposed of by oxidation. During this process, and before they are completely destroyed, they may seriously injure certain organs engaged in their destruction, especially the liver, in which histologic evidence of severe damage is generally to be made out. In typhoid fever, then, taking this as an example, the bacilli not only produce toxins which can be immunized by antitoxins, but also other poisons which have a cumulative action, and which must be destroyed by oxidation more or less at the expense of certain internal organs. There is evidence that the changes excited in the body cells by the cumulative toxins result in serious disturbances in the metabolism of typhoid patients which lead to a condition closely resembling at times acute yellow atrophy of the liver. Once started, these degenerative processes seem, to a certain extent, to be self-perpetuating. According to this conception typhoid fever does not represent merely a specific bacterial intoxication, but shows in addition to this the effects of a peculiar, self-perpetuating autointoxication. The bacterial toxemia is the predominating factor early in the disease, while the autointoxication plays the leading part in the later stages. It is possible, by accepting this hypothesis, to understand why it is that different individuals with apparently the same degree of typhoid infection react in the end so differently. It shows us that in this and many other bacterial diseases we must reckon much more with the rôle played by the individual than we have in the past.

1. Proc. of the Pathol. Soc. of Philadelphia, vol. viii, No. 3.

PHYSICAL CHEMISTRY APPLIED TO THE PHENOMENON OF AGGLUTINATION.

Every one is familiar with the phenomenon of agglutination from the point of view of a diagnostician. When blood or serum from a typhoid patient, for instance, is added in the proportion of 1:50 to a uniform suspension of typhoid bacilli, the bacteria clump together and fall to the bottom of the vessel. The explanation of this clumping has been made the subject of a

large number of investigations and many interesting results have recently been presented. In the light of these studies, the phenomenon may be divided into two phases: (1) The union of agglutinin with the bacteria, and (2) the clumping and precipitation of the bacteria thus treated, which may be called "agglutinin-bacteria." Agglutinin-bacteria which have been washed in sterile distilled water and resuspended in distilled water do not undergo spontaneous agglutination as long as no salts of any kind are present in the suspension. The addition of salts, as, for example, NaCl or $CaCl_2$, even in small quantities, produces agglutination.

The first phase of the phenomenon of agglutination, i. e., the union of agglutinin with bacteria, is probably represented by a chemical reaction which results in the formation of a more or less stable compound, agglutinin-bacteria. Very little, however, is as yet known about the nature of this reaction. The second stage, that is, the clumping of the bacteria, has been likened by Bordet to the precipitation of colloidal solutions (as of $As_2 S_3$) and emulsions of unorganized substances (as of mastic or kaolin) by salts and acids. The particles in a colloidal solution and in an emulsion, and also the bacteria in a suspension of such, are charged with electricity which is shown by the fact that they migrate toward one of the poles of the battery when a current of electricity is passed through the colloid or emulsion. Bacteria in suspension, and also many colloids and emulsions, usually have a negative charge and hence migrate toward the positive pole (anode). It has been found, now, that such colloids and suspensions of bacteria are precipitated, or agglutinated, very similarly by the same salts, and that the laws governing the precipitation of colloids also govern the agglutination of bacteria.[1] Thus the power of a salt to produce precipitation of colloids, or agglutination of bacteria, is dependent on (1) the degree of its electrolytic dissociation, (2) the valency of the cation (the basic radical of the dissociated salt), (3) the speed of migration of the cation, and (4) its decomposition tension.[2] The higher the valency of the cation and the lower its decomposition tension the greater, in general, is its power to precipitate colloids and bacterial suspensions. H ions form a striking exception to this rule, presumably on account of their high speed of migration. Sodium, for instance, has a high decomposition tension and its valency is low, and in agreement with this it has been found that its salt, NaCl, precipitates colloids only when used in high concentrations, and does not agglutinate bacteria at all, unless they have previously been acted on by agglutinin. That is, agglutinin-bacteria are more susceptible to the action of NaCl than untreated bacteria. On the other hand, salts of metals with a high valency and a low decomposition tension, as $Al_2 (SO_4)_3$, precipitate untreated bacteria when only small quantities of the salt are added. The greater susceptibility of agglutinin-bacteria to the influence of the salt is a general law. All salts clump agglutinin-bacteria more readily than the untreated organisms. This fact necessitates a revision of the old conception of the rôle of agglutinin. Apparently, agglutination of bacteria is always produced by the salts in solution and not by the agglutinin. The latter serves only to render the bacteria more susceptible to the influence of the salts. In agreement with this it has been found that agglutinin-bacteria have a smaller charge of negative electricity than untreated bacteria. This is an important fact, because the agglutination by salts seems to be due to the fact that they discharge the electricity resting on the bacteria. Just how that discharge is brought about is still an open question. Billitzer[3] is of the opinion that the cation of the salt, being positively charged, attracts many bacteria, or particles of a colloid, which results in a neutralization of their charges of electricity with the simultaneous formation of a clump which falls out of suspension.

This view explains the facts very beautifully, although it would be premature to say whether or not it is the correct explanation. We can now understand, however, why a trivalent cation is more effective in producing agglutination than a bivalent one. The former has a greater charge of positive electricity than the latter and hence can neutralize the electricity of opposite sign on a larger number of bacteria. Similarly the greater ease with which agglutinin-bacteria are clumped by salts than untreated bacteria is due to the smallness of their electrical charge which is readily neutralized by the cations of even traces of salts.

1. Neisser and Wechsberg, Münch. med. Wochft., 1904; Bechhold, Zeitschr. f. phys. Chemie, vol. 48.

2. The term "decomposition tension" refers to the electrical tension which must exist on the electrodes to deposit the metal from aqueous solutions of its salts. It is a measure of the affinity of the metal for its electrical charge.

3. Sitzungsber, d. Kais. Akad d. Wiss. in Wien, vol. cxiii, p. 1159.

AMERICAN SANITARY ACHIEVEMENTS.

In the discussions on papers on tropical diseases before the Section on Practice of Medicine, at the recent session of the Association, particular attention was called to the amount of work which has been accomplished by American sanitarians in the various tropical countries that came under the domination of our government at the time of the Spanish-American war. Cuba has been entirely freed from the scourge of yellow fever, which had existed there for four centuries and was considered to be so firmly rooted in the country that its eradication was thought to be hopeless. In Porto Rico, the characteristic anemia, which for at least a century has been sapping the life and energy of the people, has been studied as never before, its true cause recognized, and the proper treatment for it evolved, so that now there is a prospect that before many years have passed this evil, too, will be eradicated. Particular attention was called to the work of Drs. Ashford and King,[1] who

1. THE JOURNAL A. M. A., Feb. 11, 1905, p. 478.

have been engaged in a field campaign against uncinariasis in Porto Rico for several years and who have the best hope of success in wiping it out. This will be the first time in the history of medicine that a disease affecting practically a whole people and easily transmissible has been successfully combated.

The straightforward, enterprising methods of American medical investigators recall so typically what has been accomplished in all lines of work by our countrymen that we can scarcely fail to be especially proud of their success. If the Spanish-American war brought no other benefits in its train than those of the saving of life and suffering from yellow fever in Cuba and from uncinariasis in Porto Rico, it would have been well worth the cost of men and money it occasioned. As a matter of fact, however, the benefits conferred on acquired territory have been reflected in the sanitation of our own states. The compensation that always comes to the charity worker in benefit to himself has not been lacking in this national charity. While the anemia of Porto Rico was considered to be specific to the island, the discovery of its intestinal parasitic cause has led to more careful observations with regard to the etiology of obscure anemic conditions, especially among children in our southern states and the consequent discovery of the same parasite there.

What has been accomplished in advance in knowledge with regard to the distribution of this parasite and the mode of infection in the South shows the same enterprising spirit present among the medical investigators in that part of the country and makes an encouraging prospect for the future of medical progress all over the United States. Dr. Claude Smith's[2] investigations apparently confirm the assumption that these intestinal parasites gain an entrance into the body through the skin, and that it is the habit of going barefoot that causes infection and reinfection until large numbers of parasites may gather on the intestinal mucous membrane.

The work which has been accomplished in Cuba and in Porto Rico is only an introduction to the success of American sanitation in the Philippine Islands. Dr. Musgrave's paper,[3] presented to the Section on Practice of Medicine at this session of the American Medical Association, shows that the mysterious problems of amebic dysentery which have been so long under discussion are gradually nearing their solution as the result of careful investigation. Not only have the doubts about the etiology been cleared up, but the fact that a long latent period at the beginning of the disease frequently occurs, and that this may be followed by severe and even fatal infection, with fulminant symptoms lasting only a few days, shows the danger of the disease and the necessity for microscopic investigation for its diagnosis. There is, perhaps, no original work on intestinal parasites of recent years of more value than these studies of amebic dysentery.

Recently the lay press of the country has indulged in frequent expressions of discouragement with regard to the possibility of American medical science managing successfully the inevitable sanitary problems in the construction of the Panama canal. If those who are distrustfully pessimistic will but recall what has been accomplished in the last few years, apparently in the face of insuperable difficulties, a more hopeful spirit will very soon result.

If, with the comparatively inadequate resources and men of the Marine-Hospital Service and other sanitary bureaus so much has been accomplished in the recent past, it is easy to understand how much might be done if abundant opportunities were afforded and resources were only limited by the judgment, not of politicians, but of expert sanitarians.

MASTICATION AND CHILDREN'S HEALTH.

Two pathologic conditions are observed with increasing frequency among the children of this generation after the age of 2 years. They are an enlargement of the cervical glands, as well as of the adenoid tissue within the pharynx, and the occurrence of carious teeth. Among the school children of our large cities, according to medical school inspectors, about one in five, at least, will be found to have glandular enlargements in the cervical region, either anteriorly or posteriorly. Something more than one in ten will be found to be a mouth-breather, because of overgrowth of the adenoid tissue at the back of the mouth. Nearly one in four will be found to be suffering from marked deterioration of the teeth that causes interference with mastication and at the same time proves a fruitful culture medium for micro-organisms of various kinds which are sure to do harm in the lower digestive tract. Recent discussions among dentists call attention to the fact that to a noteworthy extent all of these pathologic conditions in and around the mouths of children may be traced to certain bad habits in the matter of feeding that have been introduced in recent years.

It is the present custom to advise that children shall be fed almost entirely during the second and third years on soft food that is practically liquid in character. Eggs are especially recommended, though milk still constitutes the basis of the diet. Breadstuffs are taken usually after having been soaked or, if not, care is exercised in furnishing the children only with the softer portions of bread. Very few children fail to like crusts if they are tempted to eat them when first allowed starchy materials, but after a time it is rather a difficult matter to tempt them to eat the harder portions of bread at all. Puddings that are given to children are, of course, all soft, and, as meat is practically tabooed, the children's teeth have no proper exercise of the function for which they exist, and without function no organ in the body develops properly or remains long in a normal healthy condition.

2. THE JOURNAL A. M. A., Aug. 27, 1904, p. 592.
3. THE JOURNAL A. M. A., Sept. 16, 1905.

It was very evidently Nature's intention that some chewing should be done almost as soon as the teeth begin to appear. The child erupts its incisor teeth just about the time that the decreasing milk supply in the mother suggests the necessity for additions of some kind to its diet. After the appearance of upper and lower incisor teeth, suckling usually becomes increasingly difficult, because the child's tendency to chew at something makes the operation uncomfortable for the mother. As pointed out by Dr. J. Sim Wallace,[1] this used to be the signal in past generations for the provision of various materials that needed to be masticated before they could be swallowed. After all, the habit of keeping cows is comparatively modern, and the children of the generations before that of the cow-keeping time had to be supplied with food without this precious adjunct to the child's dietary, which now, it would seem, is likely to be abused because of the readiness with which it can be obtained.

The child's gastrointestinal organs have accommodated themselves very well to the change of diet that has come with advancing civilization. In and around the mouth, however, most pathologic conditions can be traced to the lack of mastication. The lower jaw particularly loses in development because of the failure to exercise its function of crushing food, and as a consequence there is not room enough for the teeth. The crowding of the teeth leads to their decay sooner than would otherwise be the case, and, besides, the best possible cleansing of the teeth comes from the thorough mastication of the food. In the country districts of the poorer countries especially the teeth are excellent all during life as the result of Nature's care for them under the simpler conditions of life. When children are fed entirely on liquid diet, there is, as can easily be understood, none of that cleansing friction that comes from mastication. Once decomposing food has succeeded in bringing decomposition to the teeth themselves, there is the likelihood of infectious agents finding their way into the tissues and causing enlargements of the cervical glands. Nearly always anterior cervical glandular swelling is associated with bad teeth.

The lack of exercise of the jaws leading to deficient development affects also the posterior portion of the mouth and the pharynx. Instead of the effort needed to swallow a material that has been chewed, liquid material flows easily down the throat, and as a consequence there is likely to be an overgrowth of the succulent tissues that would ordinarily be kept in healthy tone by the exercise of the swallowing function and the stimulating friction of the passing bolus. To some extent at least this explains the enlargement of the pharyngeal adenoid tissue, and occasionally too of the tonsils, though probably in the latter case the accessory action of infective agents from decaying teeth is of importance. In a word, a vicious circle of pathologic conditions is formed as a consequence of the lack of proper exercise of the function of mastication. Now that the heated term, with its danger for children in their second summer, is past, it seems wise to recall attention to the benefit likely to accrue from the careful following of Nature in this matter of mastication rather than the too artificial standards of the dietary of an overcivilized period.

1. "The Rôle of Modern Dietetics in the Causation of Disease." London, Baillere, Tindal & Cox, 1905.

A CREDIT TO NEWSPAPERS.

Having in mind the entire dependence of the quacks and nostrum makers for their success on their alliance with the newspapers, and the ready acceptance by most papers of money received from those who murder the unborn as well as from those who plunder the invalid, the medical profession universally feels that the press, in the main, is by no means eager to stop those particular and vicious forms of graft that it finds profitable. Now that genuine effort is at last being made to expose to the world this newspaper graft, the profession will do all it can to support the effort to break up that alliance with the press that alone enables the nostrum vender to become rich by palming off whisky as medicine and morphin as a harmless remedy. In so doing, however, we must not lose sight of the good deeds of journalism. Our quarrel is not with the press, but with one of its actions. Much to the credit of American newspapers of all degrees, whether the metropolitan daily or the hamlet weekly, is their attitude toward the new etiology of yellow fever. Looking over the editorial comments on the New Orleans epidemic made by dozens of newspapers, one is struck by the well nigh universal acceptance of the mosquito theory. A well-established advance in medical knowledge has never been more readily received, nor its teaching more heartily supported. This has resulted in large part from the wise action of the United States Public Health and Marine-Hospital Service in sending out to the press a bulletin recounting in detail the work and experiments of Major Walter Reed in Cuba. Nevertheless, the frank confidence and ready receptivity of the press are most noteworthy and pleasing. It is true that here and there is found a discordant note of unprogressive conservatism, but the proportion is no greater than exists within our own medically trained ranks. The beneficial result to the public health of this hearty support of the press being so very great, the medical profession extends to the newspapers its profound gratitude.

THE CAUSATION OF ARTERIOSCLEROSIS.

The continuance of life depends primarily on the provision, through the blood, of sufficient nutriment of proper character for all of the tissues and organs of the body. Deficiency in either quantity or quality will result at first in derangement of function and ultimately, if maintained, in alterations in structure. Tissues of highest organization will naturally suffer earliest and in greatest degree. The blood vessels are likely to be involved in the morbid process, in part directly from the irritating effects of circulating noxious matters, in part

indirectly through the imperfect nutrient supply conveyed by the vasa vasorum. The result will be some form of vascular degeneration, namely, atheroma followed by calcification, or sclerosis, or hypermyotrophy, or a combination of several or all. Arteriosclerosis is a common association of chronic nephritis, of which, it appears, it may be cause or effect or concomitant. Old age, excessive muscular activity and various infectious and toxic processes are also to be considered among the etiologic factors. From a review of current theories regarding the causation of arteriosclerosis, Dr. John M. Cowan[1] concludes that arterial damage may result from many and varied causes. Continued high blood pressure in time invariably affects the vessels, and this is one of the most important causes of widespread disease of the blood vessels. High blood pressure may be secondary to renal lesions or it may originate without any disturbance on the part of the kidneys. Under the latter circumstances it is to be attributed to some derangement of the alimentary tract. Excess, relative or absolute, of food stuffs or of alcohol, intestinal fermentation or putrefaction, hepatic, pancreatic or gastrointestinal insufficiency may thus all be the initial fault. The arteries may be damaged as the result of various intoxications. Metallic poisons—lead, mercury, etc.—comprise one group; bacterial toxins—rheumatism, enteric fever, etc.—another. Bacteria themselves may be present in early lesions. Syphilis is a common cause of local lesions. Severe continued physical activity, however it may act, is probably also a causal factor.

PUBLIC INTEREST IN RESEARCH.

The public interest in research and in scientific knowledge of various kinds has a deep significance that augurs well for the future. Mutual understanding between the lay public and scientific men is a highly important and desirable condition. Prof. John M. Coulter,[2] in discussing this subject, makes the following statements: Matter describing scientific research that is now published in popular magazines and in newspapers is scant in amount, sensational in form and usually wide of the mark. There is an increasing desire on the part of the public for information on these subjects. The usual method of presentation is through a middleman, a reporter, who presents the matter in a "popular way," and in so doing makes misleading statements and almost entirely removes the scientific atmosphere. The important need in the situation is for the scientific men themselves to study the popular method of presentation and to provide matter which is at once scientifically correct and interesting to the public. Professor Coulter appears to us to have summarized the situation very well. He calls attention very pointedly to the common misconception of the practical nature of research. When a scientific man brings out a discovery which is of marked commercial value, the laity is apt to comment on the commendable transferal of the investigator's energy from some useless laboratory experiments to a field of practical value. In this there is disregard of the fact that the so-called practical discovery is based on and is the result of, in many cases, years of laborious and patient study, which had been considered by the average layman pure waste of time. Professor Coulter urges that interesting scientific articles by competent men will show research to be practical, will secure endowment for further research, and will secure harmonious co-operation between the various persons interested.

2. Popular Science Monthly, August, 1905.
1. Practitioner, August, 1905, p. 203.

REFORM IN CHARITABLE INSTITUTIONS.

Events in many parts of the country indicate the increasing interest of the medical profession in the conduct of charitable institutions. As organization becomes steadily more complete we are certain to exercise an increasing influence in this direction. A few months ago THE JOURNAL[1] suggested that each State Medical Association create a committee whose duty it should be to keep close and conscientious watch over the eleemosynary institutions of the state, having an eye particularly to securing scientific medical care for the inmates and graft-free administration. In more than one state this suggestion has been well received. President Halderman of the Ohio State Medical Association in his annual address strongly recommended the appointment of such a committee. Of course the "machine" politicians everywhere have medical friends through whom may be expected subtle efforts to keep the attention of physicians away from these "sores." The interest of the profession in this matter, however, is so direct and so great that its progress will not be stayed. In Illinois, reform from another source has just dawned in the appointment by Governor Deneen of the new Civil Service Commission. The character and past record of the appointees ensures genuine civil service among the employes of the charitable institutions of the state. The commission at its first meeting outlined a program of careful investigation and of practical execution of the new law. Their efforts to bring the Illinois institutions up to a high level of honesty and efficiency will be closely observed and heartily supported by the medical profession.

ANOTHER SETBACK FOR THE ALCOHOLIC NOSTRUMS.

These are busy times for the manufacturers of the alcoholic nostrums. Two powerful lay publications are conducting a steady and winning campaign against the use of these "hypocritical cocktails," and now the United States government has taken a hand. The Commissioner of Internal Revenue, John W. Yerkes, on September 12, officially notified collectors of internal revenue that, after Dec. 1, 1905, the manufacturers of these compounds will be called on to pay the special tax for rectifiers and liquor dealers, while the retailer must pay the special tax for liquor dealers. The ruling holds that the tax must be paid by manufacturers of every compound in which any added drugs are in such small quantity as to have no appreciable effect on the alcoholic liquor of which the preparation is largely composed. It is further held that the tax applies to "remedies" in which the added drugs, no matter what their quantity

1. The Journal, March 11, 1905, p. 796.

are not of a nature to impart any medicinal character to the alcoholic liquor. When the contained drugs really are medicinal no tax will be demanded. In deciding individual cases under this ruling the manufacturer's formula will not be accepted as final. There will be a chemical examination of samples bought in the open market and analyzed in the Washington laboratories. It will thus be seen that each nostrum will come up for interpretation of its character and that discretion will be observed in the classification of any particular compound. It is earnestly to be hoped that publicity will be given to the analyses and decisions in each case, for the workings of this new ruling will be very interesting both to the profession and to the general public. If this interpretation of the statute is strictly enforced it will be a decided help in the effort to protect people from one of the most dangerous classes of popular nostrums. If it results in drawing on druggists the attention of state revenue officers and anti-saloon league workers more than heretofore has been the case, great good will come. In spite of all this assistance, however, we must not abandon the agitation to have Congress, by statute, require, under severe penalty, that every nostrum label shall state truthfully the contents of the bottle.

Medical News

ILLINOIS.

Personal.—Dr. John G. Franken, Chandlerville, is slowly recovering from injuries recently sustained in a runaway accident.——Dr. Roy F. Rogers, Shelbyville, has returned from his trip to Europe.

Hospital Under Way.—The Taylorville Hospital Association has already raised $6,218 toward its building fund, and by October 1 the entire amount required of $10,000 is expected to be raised. Bids for construction of the hospital were opened September 20.

Case Against Physicians Failed.—In the damage suit brought by George Gillogly of Mount Carroll against Drs. Firestone, Karcher and Bushnell, Freeport, for alleged malpractice, the plaintiff did not make out his case and the judges entered an order to dismiss the suit.

Municipal Control of Milk Supply.—At a receent meeting of the Sangamon County Medical Society resolutions were adopted favoring the municipal control of the milk supply of Springfield, which, it was stated, is absolutely necessary in order to preserve the life and health of all, especially children and invalids.

County Hospital Examination.—Examinations of candidates for positions on the resident staff of Cook County Hospital will begin in Chicago September 28. Those who pass will be placed on the civil service eligible list and will be assigned places on the staff when vacancies occur. Dr. Fernand Henrotin is chairman of the examining board.

Endowment Conditions Changed.—A permanent hospital building for Canton is assured as the Misses Graham have agreed to purchase a site and erect a building to cost about $15,000 and to accept as an endowment fund the amount already raised by public susbscription (about $10,000), instead of $20,000, as provided in the original agreement.

Chicago.

Cocain Seller Fined.—Paul Zito, proprietor of two drug stores, and Joseph Moell, a clerk employed in one of these stores, were each fined $100 and costs for selling cocain; both have appealed.

Health Laboratory at Last at Rest.—After having received seven orders to vacate its quarters in the City Hall, after having six times succeeded in getting the order revoked, and after having secured locations in at least two other buildings, the laboratory of the health department has finally moved from the fourth floor of the City Hall to the Galbraith building, Madison and Franklin streets.

Unlicensed Practitioners in Trouble.—On September 13 Fred L. Orsinger was fined $200 and costs, and Anna Brickler $100 and costs for practicing medicine without license. The prosecution was undertaken by the State Board of Health.——Mrs. Barbara Bolle, who was accused of practicing medicine without a license and who failed to appear when the case was called, was sent to the county jail September 15, where she will be held for 90 days unless the judgment of $200 entered against her is paid.

Deaths of the Week.—During the week ended September 16, 514 deaths were reported, equivalent to an annual death rate of 13.46 per 1,000; 14 more deaths occurred than in the previous week, and 71 more deaths than in the corresponding week of 1904. Among the principal causes of death were: Acute intestinal disease, 113; consumption, 55; heart diseases, 48; violence, including suicide, 39; pneumonia and nephritis, each 34, and cancer, 26. The increase in mortality as compared with last year is 7.8 per cent., is due almost entirely to the increased prevalence of acute intestinal diseases among children under 5 years of age, caused by the frequent heavy rainfalls, followed by relatively high temperature for this season.

Personal.—Dr. O. P. Johnstone, fellow in pathology at Rush Medical College, has been appointed to the chair of pathology in the University of Colorado, Boulder.——Dr. Robert H. Babcock has returned from his summer home in Green Lake.——Dr. Henry Carey, late interne at Wesley Hospital, has been appointed a member of the staff of the Michigan State Hospital, Kalamazoo.——Dr. George F. Butler, professor of materia medica, therapeutics and clinical medicine in the College of Physicians and Surgeons, has resigned.——Dr. and Mrs. Julien E. Hequembourg have returned from the Pacific coast.——Dr. Nicholas Senn has been reappointed surgeon-general of Illinois, with the rank of colonel.——Dr. and Mrs. Oscar J. Price have returned from Europe.——Dr. and Mrs. E. C. Dudley have returned after a summer in Wyoming.——Dr. Edmund J. Doering spent the summer in the Catskill Mountains

INDIANA.

Dr. Thomas Acquitted.—Dr. William T. Thomas, Marion, who was arrested August 25, charged with a criminal operation on Ida Gaston, who died in Indianapolis the day before, was acquitted August 31, the judge stating that no evidence against Dr. Thomas existed.

Medical Society Library.—The Vigo County Medical Society has appointed a committee consisting of Drs. Knowlton, Julius R. Young and Bennet V. Caffee, to consider the advisability of establishing a medical library, space for which is expected to be obtained in the Emeline Fairbanks Library, Terre Haute.

Old Physicians.—Dr. William H. Wishard, Indianapolis, thought to be the oldest practicing physician in Indiana, is now nearly 90 years old and still answers professional calls.——Dr. Hubbard M. Smith, Vincennes, poet, historian and physician, celebrated his eighty-fifth birthday anniversary September 6.

Personal.—Dr. George D. Kahlo, Indianapolis, has returned from Europe.——Dr. Austin Funk, New Albany, sailed September 6 on the *Oceanic* for England.——Dr. B. H. B. Grayston and family, Huntington, have returned from an extensive western trip.——Dr. William H. Smith, Rushville, underwent an operation at the Ricketts Hospital, Cincinnati, and is reported to be making favorable progress toward recovery.

Knox County Hospital.—At a meeting of the Knox County Council at Vincennes September 5, an appropriation of $25,000 was made for the erection of the county hospital. A site has been secured in South Vincennes, which has been deeded to the county on the condition that it should appropriate enough money for the erection of the building. The Clark-Gibault Hospital Association will turn over about $5,000 to the fund. It is probable that work on the building will begin at once. It is expected to cost $50,000.

Madison Gets Hospital.—Madison has been selected as the location for the new Southeastern Hospital for the Insane. A tract of land has been accepted comprising about 393 acres on a site 346 feet above the level of the Ohio River. The provisions under which the site was accepted are as follows: That good water will be furnished the institution in sufficient quantity; that the commission will be given privilege of selecting whatever portion of the land offered it desires; that the price for the land be less than was originally specified; that the Pennsylvania Railroad construct switches to connect wit hthe institution; that the title of the land shall be approved by the attorney-general; that streets leading to the

proposed site of the hospital be improved by the city, and that the site shall be given to the commission within a specified time.

KANSAS.

Hospital Dedicated.—St. Mary's Hospital, Winfield, was formally dedicated September 3 by Bishop Hennessy of Wichita. The hospital has thirty rooms and is equipped with modern conveniences and appliances.

Personal.—Dr. D. W. Manson, Burlington, left on August 28 for Central America.——Dr. G. H. Hoxie, dean of the Kansas University School of Medicine, has removed to Kansas City.——Dr. W. F. Kuhn, El Dorado, has been appointed superintendent of State Hospital No. 4, Nevada, Mo.

Fever in State Hospital.—Typhoid fever has developed at the Topeka State Hospital for the Insane. Five employes and one inmate are ill with the disease. The superintendent believes that the ice supply of the institution, which is obtained from the Kansas River, is responsible for the epidemic.

Kansas University Hospital.—A contract has been awarded for the erection of the medical pavilion, which is to be the first building of the Eleanor Taylor Bell Memorial Hospital at Rosedale. It is proposed to build the other four buildings, one each year. The next building to be constructed will be the surgical pavilion; the third an isolation ward, and the other two will be ward buildings for general patients, all buildings being grouped around the central medical pavilion. The latter will accommodate forty patients.

LOUISIANA.

Personal.—Dr. Clarence Pierson, Alexandria, has been appointed superintendent of the Insane Asylum of the State of Louisiana, Jackson.

Physicians Take Outing.—Through the courtesy of the board of park commissioners, Dr. Rudolph Matas entertained on September 10, on board the tug *Samson*, Dr. White, United States Public Health and Marine-Hospital Service; Professor Boyce, the English scientist, and others.

Presentation to Dr. Hays.—On August 31 the employés of the Insane Hospital of the State of Louisiana, Jackson, presented Dr. George A. B. Hays, late superintendent of the institution, with a handsome silver loving-cup. Dr. Hays left September 1 for Alexandria to take charge of the new state hospital near Pineville.

MAINE.

Personal.—Dr. Eben Alden and wife, Rockland, are spending the summer in Europe.——Dr. John T. Dilling, Sprague's Mills, was seriously scalded about the face, hand and arm, and also inhaled steam, in a railway accident at Gardiner.

Hospital Notes.—A gift of $4,000 has been received for the Maine Sanitarium, Portland.——The Bar Harbor Medical and Surgical Hospital has been enlarged to twice its former size, at a cost of about $10,000.——The Japanese envoys have endowed two beds in the York Hospital.

Promises to Reform.—Theophilus Neilson of New York City, who owns a summer cottage in York Harbor, and has been practicing osteopathy there, was arrested August 24 on a warrant sworn out by Dr. William J. Maybury, Saco, secretary of the Maine Medical Registration Board, charged with violating the medical registration law. On his agreeing to discontinue the use of the prefix "Dr." he was allowed to go on his own recognizances.

Maine's Vital Statistics.—During 1904 the state registrar of vital statistics reports 11,009 deaths, 336 more than for the previous year, and 15,130 births, or 36 less than for the preceding year. The death causes which show an increase for the year are: Influenza, 74; nervous diseases, 70; diarrheal diseases, 68; typhoid fever, 63; nephritis, 62; whooping cough, 59; heart diseases, 56; rheumatism, 13; pneumonia, 12; diabetes, 9; measles, 8, and scarlet fever, 5. A decrease in deaths was noted in: Tuberculosis, 89; bronchitis, 32; peritonitis, 26, and cancer, 17.

MARYLAND.

Union of Schools.—A movement has been set on foot for a union of the schools of the University of Maryland, St. John's College, Annapolis, and the Maryland Agricultural College into a state university. A committee has been appointed to draw up a plan, of which Dr. Randolph Winslow is the representative from the School of Medicine of the University of Maryland.

Hospital Work Begins.—The Washington County Hospital Association has begun operations at Hagerstown on a moderate scale under Miss M. Grace Matthew, a trained nurse. At a meeting of the county medical society September 14 Mr. Edward W. Mealey, its benefactor, explained its plans and scope. At present only accidents, acute and subacute cases are admitted.

Faculty Meeting.—The one hundred and seventh semi-annual meeting of the Medical and Chirurgical Faculty of Maryland will be held at Deer Park, September 21 and 22. Matters to be brought before the next legislature, which convenes in January, will be brought before the house of delegates, especially a new medical practice act, new laws governing medical inspection in the counties, and a law regulating the practice of midwifery. The annual address will be delivered September 22 by Dr. Charles A. L. Reed of Cincinnati on "The American Family." Dr. W. S. Thayer, Baltimore, will also deliver an address on "Some Public Duties of the Physician." There will be a series of brief reviews of recent medical progress by Drs. Thomas B. Futcher, Frank Martin, Guy LeR. Hunner, and Frank D. Sanger, all of Baltimore; Dr. Harvey W. Cushing, Baltimore, will speak of palliative operations in intracerebral tumors; Dr. Frank J. Kirby, Baltimore, on thyroid tumors; Dr. Henry O. Reik, Baltimore, on eight cases of lateral sinus thrombosis and the advisability of ligating the internal jugular vein before opening the sinus, and Dr. James M. H. Rowland, Baltimore, on artificial interruption of pregnancy in toxemia, time and methods. The Allegany and Garrett county medical societies will entertain the members of the Faculty on the afternoon of September 22 with drives over the mountains.

Baltimore.

Typhoid.—The number of reported cases of typhoid fever for the week ended September 16 was 34, a decided decrease; deaths from the same disease, 9.

Library to Be Made Useful.—The library of the College of Physicians is to be put on a working basis. A librarian has been appointed and several hundred volumes have been collected.

Personal.—Dr. William Hewson Baltzell, now in Paris, will spend the winter in India.——Dr. Edwin Geer, commander of the Maryland Naval Reserves and surgeon of the fire department, while attempting to board a car on September 6 fell and was severely injured about the nose and face.——Dr. Edward J. Bernstein has removed to Kalamazoo, Mich., and Dr. Milton R. Walter to Chicago. Both have been connected heretofore with the University of Maryland Medical School.

MASSACHUSETTS.

Embalmers' Board Established.—Under the new state law a board of embalming has been established. Henceforth every undertaker who practices embalming must have a license, for which he must pay $5. Those in practice three years are passed, while future applicants must pass an examination by this board.

Boston Death and Disease.—For the ten weeks ended September 9 there were reported to the Boston Board of Health 2,216 deaths, as against 1,962 during the same period in 1904, and an average annual death rate of 18.50 per 1,000. Of these deaths 645 were of infants under one year, 836 of children under 5, and 406 of individuals over 60 years. There were 222 cases of diphtheria, with 15 deaths; 81 of scarlet fever, with 2 deaths; 219 of typhoid fever, with 28 deaths; 148 of measles, with 6 deaths; 403 of tuberculosis, and 215 deaths; 114 deaths from pneumonia, 11 from whooping cough, 186 from heart disease, 30 from bronchitis, and 77 from marasmus.

Good Work of Floating Hospital.—The Boston Floating Hospital's season of ten weeks ended September 13. During this time 279 patients were cared for in the four permanent wards, with 90 deaths; 90 were discharged well, 71 relieved and 28 not relieved. Of the 90 deaths 26 occurred within forty-eight hours after admission. On the last day 11 patients were transferred to the New England Hospital for Women and Children and 5 to the Children's Hospital. In the open ward, upper deck, 686 patients were cared for from 9 a. m. to 4 p. m. They made 2,374 trips, an average of 47 per day. Diplomas were given to the graduate house officers, Drs. Alpha R. Sawyer and Alexander O. Fasser, to the externe in charge of day patients, Dr. W. A. Dutcher, and to 23 nurses who successfully completed the postgraduate course in the hospital.

MICHIGAN.

Large Endowment for Hospital.—By the will of the late Mrs. Julia E. Hackley, Muskegon, $300,000 is devised to the Hackley Hospital, Muskegon.

Hospital Note.—The Northern Michigan Hospital, Calumet, will be reopened about the end of September, on the return of

Dr. Charles J. Sorsen from Germany.——Dr. Peter J. Noer, formerly of Menominee, has completed a hospital building at Wabeno at a cost of $15,000.

May Be "Read Out" in Meeting.—The secretary of the Pontiac Medical Society has been ordered to keep a scrapbook in which he will paste all press notices regarding members of the society. These notices are to be read at the monthly meetings and explanations from the advertised members will then be in order.

Settlement of Contagious Disease Expenses.—Judge Perkins, Grand Rapids, rendered a decision September 7 in the Circuit Court, which defines what portion of the expense incurred from dangerous contagious diseases shall be borne by the county and what by the immediate community in which the infection exists. He holds that the expense of investigation preliminary to determining the nature of the disease, isolation, quarantine, disinfection, fumigation, or any service performed for the good of the general public, must be paid by the board of health, while expenses for medical attendance and nursing are chargeable to the county.

July and August Mortality.—During July the number of deaths reported was 2,482, an increase of 88 over June, and during August, 2,797, an increase of 315 over the preceding month. The respective death rates for July and August were 11.5 and 12.9 per 1,000. The deaths of infants under one year numbered 506 in July and 687 in August; of children from 1 to 4 years, 166 in July and 236 in August, and of individuals over 65, 678 in July and 702 in August. Almost the entire increase in mortality in August was due to the high mortality among children under 5 years of age. The more important causes of death were as follows: Tuberculosis, 196 in July and 203 in August; typhoid fever, 45 in July and 59 in August; diphtheria, 32 in July and 22 in August; measles, 10 in July and 4 in August; whooping cough, 15 in July and 19 in August; pneumonia, 65 in July and 51 in August; diarrheal diseases of infants, 204 in July and 422 in August; accidents and violence, 214 in July and 231 in August; cancer, 143 in July and 141 in August, and smallpox, 4 in July and 6 in August. Eight deaths were reported from tetanus in July, and seven of these were ascribed to the toy pistol. Two deaths from tetanus were reported in August.

Personal.—Dr. Francis H. Callow, Mount Morris, returned from England August 12.——Dr. Henry J. Hartz, Detroit, has been appointed a member of the board of trustees of the State Sanitarium for Tuberculosis.——Dr. John V. Frazier, Lapeer, has been appointed first lieutenant and assistant surgeon, M. N. G., and assigned to the Third Infantry.———Dr. Joseph B. Whinery, Grand Rapids, has been appointed a member of the Board of Health.——Dr. Thomas M. Koon, Grand Rapids, has been re-elected health officer at a salary of $1,800.——Dr. Ralph C. Apted has been appointed city physician of Grand Rapids at a salary of $1,800.——Dr. Frank B. Gray, Clare, has been appointed a member of the board of establishment and control of the state sanitarium for consumptives.——Dr. William L. Bishop, Bay City, has moved to Salt Lake City, Utah.——Dr. Alexander McK. Campbell, Grand Rapids, has been elected president of the Board of Health and Poor Commissioners.——Dr. Clarence L. Gorsline, Battle Creek, was operated on for appendicitis September 13.——Dr. Alexander Magill, Midland, who is moving to Bay City, was presented by the Midland County Medical Society, of which he is president, with a gold-headed cane, suitably engraved, at a banquet given in his honor September 7.

MISSISSIPPI.

Appropriation for Hospital.—The city council of Greenville has appropriated $3,000, to be paid in December to the King's Daughters' Hospital.

Illegal Sale of Cocain.—A druggist in Greenville was recently fined the maximum amount of $500 and six months in jail for selling cocain regardless of the statute, which forbids its sale except on prescription of a licensed druggist. This particular individual was said to have sold from $10 to $12 worth of cocain a day.

Amendment to Charter.—The Jackson Hospital Company, a corporation with its domicile in Jackson, has petitioned that its name be changed to the Jackson Sanitarium and Training School for Nurses, and that its charter shall be so amended as to give the corporation the additional power and authority to conduct the training school for nurses.

Personal.—Dr. John R. Tackett, Meridian, a member of the executive committee of the State Board of Health, is assisting Dr. John F. Hunter, secretary of the board, with the executive work of his office.——Dr. Percy W. Toombs has been appointed health officer of Greenville.——Dr. Walter Merritt, Jackson, has been elected third assistant physician of the State Insane Hospital, Jackson.——Dr. Harry H. Harrison, Jackson, has been appointed a member of the State Board of Health; Dr. Osborn M. Turner, president of the Jackson Sanatorium, and Dr. Ethelbert H. Galloway, city physician of Jackson, all vice Dr. John H. Rhodes, deceased.——Dr. Samuel H. McLean has been elected vice-president and Dr. Ethelbert H. Galloway, secretary, of the Jackson Sanatorium.

MISSOURI.

Personal.—Dr. Claude C. Crowley has been elected president, and Dr. Robert Sevier, clerk, of the Richmond Board of Health. Drs. Charles B. Shotwell and Elmer T. McGaugh are the other members of the board.

Typhoid at State University.—Typhoid fever is reported as epidemic at the State University, Columbia. Since the beginning of the epidemic seventy-one cases have been reported, with one death.

Doctor Released.—In the case of Dr. Elizabeth Short, Kansas City, charged by the coroner with having performed a criminal operation on Mrs. Louise O'Leary from the effects of which she died, the defendant was discharged August 19 because of lack of sufficient evidence.

Mount Vernon Gets Sanatorium.—At the meeting of the board of commissioners in St. Louis September 4, Mount Vernon was selected as the location of the new Missouri State Sanatorium for the Treatment of Incipient Pulmonary Tuberculosis. Mount Vernon's offer included a site of 165 acres, valued at $8,500, a bonus of $7,000 in cash, water and electric lights free of charge to the state for five years, and free telephone service.

Personal.—Dr. Frederick L. Deck, St. Louis, has returned from a trip to Japan.——Dr. Ira C. Young, St. Louis, has been appointed lecturer on orthopedic surgery at the St. Louis College of Physicians and Surgeons.——Dr. and Mrs. John A. James, St. Louis, have returned from Europe.——Dr. George James P. McNeil, house surgeon at the M. K. & T. Hospital, Sedalia, returned August 31 from Europe.——Dr. Frank S. Vernon, Charleston, has been re-elected physician at State Hospital No. 4, Charleston, for a term of two years.——Dr. Emil H. Henckler, vaccine physician, St. Louis health department, was appointed physcian-in-charge of the North End Dispensary September 1, succeeding Dr. Franz J. T. Specht, resigned.

St. Joseph.

Asylum Pavilion Opened.—The new Carey building, a pavilion for women at State Hospital No. 2, was formally opened September 6.

Gift to Library.—Dr. Jacob Geiger has presented to the library of the Medical Department of the St. Louis University a complete set of Virchow's archives, comprising 170 volumes.

Personal.—Dr. Louis J. Dandurant has had conferred on him the degree of master of arts by the faculty of Conception (Mo.) College, August 25.——Dr. Peter J. Kirschner was admitted to State Hospital No. 2, August 31 as a private patient.——Dr. Samuel F. Kessler was elected president, and Dr. Luther A. Todd, secretary, of the Northwest Missouri anatomical board, organized under the state law for the purpose of securing subjects for dissecting purposes for the local medical college.

NEW JERSEY.

Agree Not to Accept Contract Work.—"Every physician in Trenton has signed an agreement not to accept contract lodge work in any form," says the August number of the *Pennsylvania Medical Journal*.

Personal.—Dr. Wesley R. Wales, Cape May, who was indicted in the United States District Court for misapplying $16,000 funds of the First National Bank of Cape May, was acquitted September 16 after the jury had deliberated only fifteen minutes.

Sanitary Milk Plant for Camden.—Stimulated by the results achieved by sanitary milk plants in the neighboring cities, the city of Camden started a movement to establish a similar plant in that city. The subject was first considered by the Camden City Medical Society. The public records of Camden show that the death rate of children under 5 years of age during the past twelve months exceeded 36 per cent. of the whole number born during the same period. The bacteriologic examinations of the Camden milk supply show that a large number of the deaths are among children, due to milk contamination. A company has been organized with medical men at its head. The officers are as follows: President, Dr. Alexander McAlister; vice-president, Dr. A. Haines Lippin-

cott; secretary, Dr. Howard F. Palm; treasurer, M. F. Ivins; counsel, Thomas P. Hurley; chemist, Paul H. Langner, and veterinary inspector, Dr. J. O. George.

NEW YORK.

Donation to Hospital.—The Brooks Memorial Hospital, Dunkirk, has received a first-class hot-water system costing $2,000 through the generosity of Mr. M. L. Hinman.

Buffalo Personals.—City Bacteriologist William G. Bissell has been delegated to represent the health department at the American Public Health Association.——Dr. Charles Cary is taking an automobile trip through the eastern states.

Loses Suit.—In the suit brought by Dr. Clarence V. Grey, Elba, against the town of Darien to recover $100 for medical services rendered an alleged pauper, on September 1 the jury returned a verdict of no cause of action and judgment with costs was entered against the plaintiff.

Complies with Law.—In compliance with the provision of the law requiring physicians to register in counties in which they practice, Dr. Welcome L. Filkins, Albany, who had been charged by representatives of the Madison County Medical Society with a violation of the public health law, was discharged from custody.

Hospital Incorporated.—The Eastern Long Island Hospital Association of Suffolk County has been incorporated to maintain a hospital and dispensary. Among the directors are the following physicians: Drs. Barton T. Skinner, Clarence C. Miles and Arthur C. Loper, Greenport; Dr. Frank E. Benjamin, Shelter Island, and Dr. J. M. Hartranft, Southold.

The Work of the Mission.—The Fresh Air Mission, Buffalo, in its report of work done during the summer at Cradle Beach, showed that 698 children were received through the regular two weeks' outings and that 51 others were cared for at St. Margaret's Convalescent Cottage. The hospital at Athol Springs has been almost full since the opening day.

Personal.—Dr. George E. Beilby, resident physician at the State Industrial School, Rochester, has resigned.——Dr. and Mrs. Florence O. Donohue, Syracuse, returned from Europe August 13.——Dr. William R. Wells, Mount Morris, received the congratulations of his friends August 18 on the eighty-sixth anniversary of his birth.——Dr. Albert L. Beahan, Canandaigua, was operated on for appendicitis August 25 and is doing well.——Dr. Mary Clayton, Ogdensburg, has been appointed physician at the Binghamton State Hospital, to succeed Dr. Mary O'Malley, resigned.——Dr. Charles I. Redfield, Middletown, has been elected a member of the medical board of Thrall Hospital, vice Dr. David B. Smiley, deceased.——Mr. Alec. H. Seymour, Binghamton, has resigned the clerkship of the Broome County Surrogate's Court to accept the secretaryship of the State Board of Health, succeeding Dr. William E. Johnson, Waverly.——Dr. Henry L. Elsner and family, Syracuse, returned from a trip to Scandinavia August 30.——Dr. C. H. Glidden, Little Falls, has been appointed health officer of Little Falls.——Dr. Nathan Jacobson and family, Syracuse, returned from Europe September 2.

New York City.

Bequest for Hospital.—Among the numerous charitable institutions benefited by the will of the late Edward Whelan is St. Mary's Hospital, Brooklyn, which received $5,000.

New Hospital Busy.—The St. Gregory's Free Hospital and Ambulance Station, which was opened at 93 Gold Street on June 9, has treated more than 3,500 cases since that time and at present receives on the average 75 emergency and accident cases a day.

Typhoid Fever Decreasing.—The latest report of the health department shows a decrease of 47 cases of typhoid fever in the city in the week. The prevalence of this disease was greatest during the last week in August, but the death rate at the present is almost normal.

Harvey Society Lectures.—The first lecture of the recently organized Harvey Society will be given by Prof. Hans Meyer, who will speak in German, on "The Theory of Narcosis," October 7, at 8:30 p. m., in the New York Academy of Medicine. The second lecture will be given October 14, at the same hour and place, by Prof. Carl von Noorden of Frankfort, on "Modern Problems of Metabolism." The lecture will be delivered in English.

In Trouble.—For swindling the poor folks of the East Side, posing in the guise of a healer of the sick, Alfred Meyer, a former convict, was sentenced August 4 in the Court of Special Sessions, Manhattan, to imprisonment for eleven months in the penitentiary on Blackwell's Island and to pay a fine of $500.——David Antonio, a "voodoo" doctor, on August 31 was sentenced to imprisonment for six months for practicing medicine without a license.

Heavy Fine for Milk Dealer.—On September 8 a new justice had his first experience with offenders against the pure milk ordinances. In the first case, in which a plea of guilty was entered, a fine of $75 or thirty days in the Tombs was imposed. Ten of the other offenders pleaded guilty, preferring to have their cases postponed until some other justice presided. Those held were warned that another plea of guilty would mean imprisonment with no alternative fine.

Notes from Quarantine.—There were seventeen persons removed from the Panama steamer *Mexico*, who were sent to Hoffman's Island for observation. This is the largest number taken from a canal zone steamer in several months.——The yellow fever patient at Hoffman's Island shows signs of improvement, and it is believed that he will recover.——The Hamburg-American liner *Moltke* brought no steerage passengers, a case of cholera having appeared among the Russian immigrants at Hamburg.

Personal.—Mr. and Mrs. Arthur S. Chittenden arrived on the *La Bretagne*, from Havre, September 12.——Dr. and Mrs. Edward P. Kinnicutt arrived from Antwerp on the *Kroonland* September 12.——Dr. Vincenzo Sellaro has been threatened with death by the Black Hand if he does not surrender $5,000 to them.——Dr. Hugh C. Parmenter was removed from his position as senior surgeon at Harlem Hospital by order of Superintendent Armstrong of Bellevue and allied hospitals, on the charge of abusing the father of a patient in the hospital. Dr. Parmenter has appealed and hopes to have the case reinstated.

Contagious Diseases.—There were reported to the sanitary bureau for the week ended September 2, 670 cases of tuberculosis, with 147 deaths; 282 cases of typhoid fever, with 21 deaths; 144 cases of diphtheria, with 13 deaths; 122 cases of measles, with 11 deaths; 48 cases of scarlet fever, with 2 deaths; 18 cases of cerebrospinal meningitis, with 8 deaths; 7 cases of varicella and 1 case of smallpox. For the week ended September 9, 396 cases of tuberculosis, with 146 deaths; 184 cases of typhoid fever, with 23 deaths; 117 cases of diphtheria, with 14 deaths; 95 cases of measles, with 7 deaths; 48 cases of scarlet fever, with 2 deaths; 12 cases of cerebrospinal meningitis, with 12 deaths; and 8 cases of varicella.

NORTH CAROLINA.

Medical College Opened.—The Department of Medicine of the University of North Carolina, Raleigh, opened for its fourth annual session September 11.

Vital Statistics.—The mortuary reports for July from 21 towns show that 290 deaths have been reported, equivalent to an annual death rate of 22.6 per 1,000. Diarrheal diseases caused 73 deaths; consumption, 33; typhoid fever, 25; heart diseases, 14, and brain diseases, 11. Of the 290 deaths 129 were of children under 5 years of age.

Personal.—Dr. Edward C. Register, Charlotte, has spent the summer in Europe.——Dr. Eugene B. Glenn, Asheville, has ben made major surgeon of the N. C. N. G., and assigned to the First Infantry.——Dr. William DeB. MacNider, Raleigh, has been elected professor of pharmacology and bacteriology in the Department of Medicine of the University of North Carolina.

NORTH DAKOTA.

Personal.—Dr. W. G. Brown, Fargo, formerly of St. Cloud, Minn., has recently returned from Europe.——Dr. S. G. White has located in Minot.

Illegal Practitioners Arrested.—Dr. J. H. Sweeney was recently arrested at Lehr, McIntosh County, and fined $50 for practicing medicine without a license.——Dr. J. Bergstrom, Cooperstown, was fined $50 for a similar offense.

Medical College Opened.—The Medical College of the University of North Dakota will open September 26. The dean announces that the university laboratories, equipment and instruction have been so arranged as to offer a combination of two years of academic work and two years of premedical work, so that the certificate of graduation from the academic department will admit students to the third year in the medical college.

OKLAHOMA.

Personal.—Dr. Leopold Kaffle, Oklahoma City, has been made assistant physician at the Insane Asylum of the State of Louisiana, Jackson.

Hospital Closed.—The Oklahoma City Hospital, Guthrie, one of the important institutions of the city, was closed July 31.

owing to disagreement of the staff regarding its management, and the patients were removed to St. Anthony's Hospital.

Hospitals Incorporated.—The Mangum Hospital has been incorporated with $10,000 capital stock.——Dr. John H. Scott has opened a nineteen-room hospital at Shawnee.——The Woods County Hospital Association has been incorporated at Alva with a capital stock of $10,000.

Asylum Investigation.—The committee appointed to examine the conditions existing at the Norman Sanitarium has reported that there has been no ill-treatment, but that the number of attendants is insufficient, that the sanitary facilities should be greatly improved, and that the colored and white patients should be kept in separate wards.

Law Not Retroactive.—The attorney-general has rendered an opinion in answer to a request regarding the osteopathic practice law, whether or not those who were practicing when the law went into effect would be required to take an examination. The attorney-general gives as his opinion that those who were in practice prior to March 17, 1903, need not be examined.

State Association Chartered.—A charter was issued July 31 to the Oklahoma State Medical Association. The headquarters of the association are at Guthrie, and the following are the officers and incorporators: Dr. Richard H. Tullis, Lawton, president; Dr. Eugene O. Barker, Guthrie, secretary and treasurer, and Drs. W. E. Dickens, Enid, James M. Bonham, Hobart, and J. Henry Barnes, Jet.

PENNSYLVANIA.

Meeting of the State Medical Society.—The annual meeting of the State Medical Society will be held at Scranton, September 26, 27 and 28. The address in medicine will be given by Dr. Solomon-Solis Cohen, Philadelphia.

Typhoid at Nanticoke.—Typhoid continues prevalent in Nanticoke and new cases are still being reported. Dr. Frederick C. Johnson of the State Board of Health is investigating the cause of the epidemic and has charge of the fight against the disease. There were 27 new cases reported September 13. Altogether 212 cases have been reported.

Reading Relief Report.—The statement of the Philadelphia & Reading Railroad Relief Association for the month of July shows an expenditure of $19,907.20, of which $8,950 was paid for deaths and $10,957.20 for disability. The number of deaths was 17; 5 were accidental and 12 from natural causes. The number of new cases reported was 1,035.

School Teachers Asked to Observe Health Laws.—Apropos of the opening of public schools September 11 Dr. Samuel G. Dixon, state commissioner of health, has communicated with the principals of all the public, private and parochial schools throughout the state, calling their attention to the statute requiring all pupils to be successfully vaccinated before being admitted.

Philadelphia.

Visitors from Abroad.—Dr. Raymond Santos of Lisbon, Portugal, visited the city hospitals and medical schools last week.——Dr. Charles Keys, a resident of Brazil, is paying a visit to this city.

Medical Inspection in August.—The report of the division of medical inspection of the Bureau of Health for August shows that there were 14,486 inspections made, excluding schools; that 372 fumigations were ordered; 5 cases presented for special diagnosis; 60 cultures taken for examination; 60 injections of antitoxin given, and 892 vaccinations performed.

Health Report.—The deaths reported from all causes during the week ended September numbered 399. This is an increase of 25 over the number reported for the previous week and a decrease of 9 from the number reported in the corresponding week of last year. The principal causes of death were: Typhoid fever, 10; diphtheria, 4; tuberculosis, 65; cancer, 17; meningitis, 2; apoplexy, 12; heart disease, 34; acute respiratory disease, 23; enteritis (under 2 years), 44; enteritis (over 2 years), 5; nephritis, 27; suicide, 6; accidents, 23, and marasmus, 20. There were reported 166 cases of contagious disease, with 16 deaths, as compared with 196 cases and 17 deaths in the previous week.

RHODE ISLAND.

Receiver Appointed for Hospital.—Dr. Thomas H. McNally, mayor of Central Falls, has been appointed temporary receiver of the Pawtucket General Hospital.

For the Benefit of the Tuberculosis Camp.—The fête of Mr. and Mrs. Frederick W. Vanderbilt, Newport, August 15, netted $13,500 for the tuberculosis camp at Pine Ridge.

Medical Inspectors of Schools.—The Providence Board of Health has decided to appoint two physicians to visit private schools and see that the children in attendance are afflicted with no contagious disease. A physician is also to be detailed for duty at the office of the health board to examine such children as may be sent there from the public school.

Hospital Opened.—The two new wings of the Woonsocket Hospital, one of which was the gift of Mrs. Mabel Rathbun Jenckes, wife of Dr. Frank H. Jenckes, and the other built with funds raised by different public entertainments for the benefit of the hospital, were opened recently for public inspection. The hospital itself has been remodeled and newly equipped.

Twin City Hospital.—The first meeting of the board of directors of the Twin City Hospital was held at Pawtucket September 4, when the following were confirmed as a permanent hospital staff: Surgery—Drs. William L. Harris, Richard P. Boucher, Providence, and Raynor Woodhead, Valley Falls; Medicine—Drs. Thomas H. McNally, Central Falls, and William O'Brien; Gynecology—Drs. William H. Heimer, Pawtucket, and Joseph Myre, Central Falls; Eye, Ear, Nose and Throat—Dr. Henry M. Jewett, Providence.

GENERAL.

Smallpox in Cuba.—A fatal case of smallpox in a child has been reported from the village of Palma Soriano, in the province of Santiago.

The Association of Erie Railroad Surgeons.—This association held its annual meeting at the Hotel Astor, New York City, September 12 and 13, under the presidency of F. A. Goodwin of Susquehanna, Pa. The following officers were elected for the ensuing year: President, M. S. Cramer, Kenton, Ohio; vice-president, D. A. Currie, Englewood, N. J.; secretary and treasurer, J. A. Allis, Montclair, N. J.

Association of Military Surgeons of the United States.—The fourteenth annual meeting of this association opens in Detroit September 26. Among the distinguished foreign representatives are Dr. S. Suzuki, surgeon-general of Japan and chief surgeon of the combined fleets of Admiral Togo; Drs. Ho Kan Yen of the Chinese Navy, Ying Yung Tsui of the Chinese Army, and Wang-Hang-Chung of the South China Army, and representatives from the British, Mexican, Canadian, Guatemalan and other foreign services. The representatives of the medical department of the United States Army are Col. Valery Havard, assistant surgeon-general, who has just returned from Manchuria, and Majors William C. Borden and Charles M. Gandy. In addition, Major Louis Livingston Seaman, who has just returned from the seat of war in Manchuria, will give his experiences from the viewpoint of the Japanese Army at the front. The meetings will be held in the auditorium of the Hotel Cadillac, the first session opening at 10:30 a. m., Tuesday, September 26.

The Yellow Fever Situation.—In New Orleans the yellow fever situation continues encouraging. The new cases each day run from 25 to 40, but there are few deaths. The heroic efforts of Tallulah have promptly improved the situation, and elsewhere in Louisiana the epidemic waned. In Mississippi, Vicksburg and Natchez continue to report a few new cases, but vigorous efforts have brought the disease fully under control. Arkansas is relatively quiet. Governor Davis has appointed Dr. Ben. L. Harrison, Jonesboro, to succeed Dr. William H. Jackson on the State Board of Health. In his letter of appointment the governor said: "The State Board of Health will be recognized in the future as a human institution."——The case at Maysville, I. T., proved not to be yellow fever.——Florida has presented the most unfavorable news of the week. There has been a sharp increase of new cases in Pensacola, together with some failure of public effort to meet the conditions.——Atlanta and the state of Georgia maintain a sort of armed neutrality.——At Chattanooga the local superintendent of quarantine was discharged for permitting two refugees to drive through the town.——At Columbia, S. C., the board of health resigned because the city council would pay no attention to its recommendations.—Menominee, Mich., and Marinette, Wis., each reported a refugee ill with yellow fever.

FOREIGN.

Variola in Chili.—According to the *Public Health Reports*, the epidemic of variola is increasing and is spreading from city to city.

Mushroom Poisoning.—The German public health authorities have issued a pamphlet on "Mushrooms," which is given free to officials and organizations for distribution.

Professor Toldt of Vienna in the House of Lords.—The well-known professor of anatomy at Vienna, Karl Toldt, has been appointed a life member of the Austrian house of lords.

Graefe Medal Goes to Hering.—The German Ophthalmological Congress has awarded the Graefe medal this time to Professor Hering of Leipsic for his works on the physiology of optics.

Next French Congress of Neurologists and Alienists.—The question to be discussed at the next meeting, which will be held at Lille in 1907, are the "Senile Brain" and the "Responsibility of Hysterics."

Principles of Ethics in Spanish Dress.—The *Boletin de la Asociacion Medica de Puerto-Rico* has just concluded the publication, in Spanish, of the Principles of Ethics of the American Medical Association.

Mailing of Infectious Material.—The German government now requires that infectious material from or forwarded to bacteriologic institutes must be mailed in special receptacles, made according to government models.

New Hospital in French Indo-China.—The authorities at Cambodia, in French Indo-China, it is reported, have decided to establish a general and lying-in hospital for natives at Phom-Penh. The work of construction is to be started immediately.

First International Congress for Psychiatry and Neurology.—It is announced that the First International Congress of Psychiatry and Neurology is being organized to convene at Amsterdam, Sept. 3-8, 1907. Professor Jelgersma of Leyden will preside.

Medal for Work on Vaccine.—The French Académie de Médicine, through the minister of the interior, has awarded a silver medal to Dr. Alan Green, bacteriologist in charge of the vaccine lymph department of the Lister Institute of Preventive Medicine, for his work on vaccine, published in the Proceedings of the Royal Society.

Plague in the Argentine Republic.—It is reported that there has been a reappearance of this disease in Santiago del Estero. The sanitary authorities are taking every possible precaution to prevent the spread of the disease, and are especially directing their efforts toward extermination of rats in private dwellings as well as in public buildings.

Epidemic Cerebrospinal Meningitis in Germany.—The epidemic seems to be declining in Silesia, where it made its first appearance with such ravages. It is becoming more prevalent in Western Prussia, and some leading medical authorities, we learn, are quite pessimistic in regard to it, even asserting that the disease may prove to be the terror of the twentieth century and sweep over the world.

Anti-tuberculosis Campaign in Bulgaria.—The Association of Bulgarian Physicians has had a popularly written "Catechism for the Fight Against Tuberculosis" printed and distributed gratuitously throughout the country, especially in educational centers. All the schools of the upper grades now have each a medical inspector who lectures occasionally on hygiene and inspects the scholars twice a week to detect transmissible diseases.

Death of Physician from Hydrophobia.—Dr. Feiber of Holzapfel, Germany, was bitten by a mad dog three months ago. The wound was carefully treated and he went the next day to the Berlin Institute for Infectious Diseases, where he was given twenty-one preventive inoculations and was then dismissed as cured. He did not believe that the cure was complete, and ten weeks after the injury symptoms of hydrophobia developed, fatal in four days.

The Neuburger Endowment for Scientific Research.—The friends of Dr. T. Neuburger of Frankfort, Germany, presented him with $20,000 on the occasion of his fiftieth professional anniversary, two years ago. He added $5,000 and presented the sum to the authorities to be applied to promote scientific researches. It has been decided to devote the income from the endowment for the next five years to the cancer research work at the local Institute for Experimental Therapy.

Training in Forensic Medicine.—Two years ago the Paris medical faculty organized an Institute of Legal Medicine and Psychiatry to aid in training medicolegal experts for the courts. A diploma in legal medicine and psychiatry was given on completion of the course, which was open to any physician or university medical student, native or foreign. The *Semaine Médicale* brings the information that the course has been recently enlarged to include criminology and penal law, mental and legal medicine.

Cholera in Madras.—The epidemic in Madras is said to have assumed alarming proportions. The death rate for the last week in July was 89 per 1,000, and in some places is said to have reached 200 per 1,000. The infection is said to have been carried to villages in the suburbs of Madras, and unless severe measures are quickly adopted it is feared that the epidemic will spread to the railroad work shops at Perambore, where are thousands of workmen, and even to the Madras water supply at Red Hills.

Rejection of Recruits with Tendency to Mental Affections.—The German authorities have recently issued more stringent regulations to prevent the acceptance of new recruits with a tendency to mental affections, and to detect those already enrolled. In a number of garrisons permanent arrangements for postgraduate training in neurology and psychiatry are to be made. For several decades a course in psychiatry has been obligatory for the students in the military medical college at Berlin. The official notice also contains suggestions for detection of simulation.

Prizes Offered by Mexican Academy of Medicine. — Two prizes of $500 each are offered for the current year by the National Academy of Medicine at Mexico. The first is for the best work on the early diagnosis of tuberculosis and means to prevent its spread. The second prize is for the study of leprosy in Mexico, its most frequent clinical types, and means to prevent its spread. Competing articles must be received by the secretary before October, 1896, accompanied by the name of the author in a sealed envelope. The only condition is that the articles must be in Spanish.

The Leipsic Chair of History of Medicine.—The chair provided by the Puschmann endowment has been fully organized, and Prof. Karl Sudhoff of Hochdahl has accepted its incumbency. He has recently been made chairman of the permanent international committee of arrangements for the International Historical Congress of investigators interested in the study of the natural sciences. Sudhoff's name is well known by his researches on the works of Paracelsus. The Puschmann endowment provides also for other features of the history of medicine besides the professorship, as already mentioned in these columns.

Postgraduate Schools at Milan.—It is reported that by arrangement between the Italian ministers of public instruction and finance, the official representatives of the province and commune of Milan and the managers of the hospitals of that city, it has been decided to establish postgraduate schools of clinical midwifery and gynecology, diseases of occupation, and contagious epidemic diseases. The first will have 200 beds, the second 60, and the third 164, distributed among seven pavilions. Others may be created later. The estimated cost of these establishments is $53,000. The directors are to rank with university professors.

Epidemic of Anterior Poliomyelitis in Norway.—Platou describes in the *Tidsskrift f. d. Norske Laegefor.* for September an epidemic of 20 cases of acute anterior poliomyelitis in his district last year, with 6 deaths. The first cases seemed to develop from contact infection, but no connection could be determined for the later scattered cases. The age of the children ranged from 7 weeks to 14 years. No adult was attacked. The legs were affected with paralysis more than the arms; complete hemiplegia was not observed in any instance. The severity of the disease varied in different cases, some running an abortive course, while death occurred abruptly in others. The disease terminated fatally or else in complete recovery in time. Treatment and disinfection were the usual measures.

Return to Germany of Professor Baelz of Tokio.—Professor Baelz has returned to his old home, Stuttgart, after a residence of twenty-nine years in Japan. For twenty-five years he has been a leading and pioneer professor in the medical college at Tokio, and almost all the Japanese physicians of the day have been his pupils. His works on the anthropologic and pathologic peculiarities of the Japanese have been numerous and important, as also his contributions to the study of beriberi and other tropical diseases. He is now 60 years old, and received many tokens of friendship and esteem from the mikado and empress of Japan and Japanese scientific societies, as well as from personal friends, before he left the country last June. He was professor of physiology at first and later of internal medicine and gynecology. He married a Japanese.

Laryngologists Refuse to Take Part in Approaching International Medical Congress.—The laryngologists of the world have taken exceptions to the rulings of the Fifteenth International Medical Congress, which group otology, rhinolaryngology and stomatology in a single section. The laryngologists of Great Britain have officially declared that they would refrain from participating in the congress and the Germans are following suit. The committee of arrangements of

the international congress have consequently notified the national committees of propaganda that the rulings have been modified so that Section XII is now divided into three subsections, Rhino-laryngology, XII a, Otology, XII b, and Stomatology, XII c. The laryngologists have long been considering the advisability of holding a specialist international congress, and occurrences seem to be tending this way.

Pecuniary Damages for Inoculation with Syphilis.—A Berlin court recently awarded a young woman $725 and a monthly allowance of $37, as she presented testimony to show that her health had been seriously undermined by syphilis transmitted by a druggist with whom she cohabited. These sums were reduced to $400 and a monthly allowance of $12.50 by the court of appeals. The defendant based his defense on the fact that the woman was not an ignorant young girl, and that three physicians who had been treating him for syphilis contracted two years before, had declared that he was entirely cured a month or so before the relations with the young woman had commenced. The judge remarked that the defendant must have been fully aware of the malignancy of the disease, and must have known that he might transmit it after two years, as it is liable to remain virulent for three years or more.

First International Congress of Physicotherapy.—The membership of this congress, which met at Liège August 12, numbered over 650, and fully 200 members took part in the discussions. The principal countries were officially represented and great enthusiasm prevailed among the members. Jacques of Brussels remarked that in this congress physicotherapy left the domain of empiricism and acquired a soul. The empirics were represented in the congress, and the measure proposing to limit the practice of physicotherapy to physicians was modified so that it was not so drastic as its promoters intended. The congress was divided into four sections, hydrotherapy and climatotherapy, electrotherapy, radiology and treatment by movements or exercise. It was voted to organize another similar congress two years hence, and Geneva was chosen for the meeting place. Dr. F. B. Bishop of Washington was the official delegate from this country.

League of Defense Against Anemia.—Twenty-five prominent citizens of Porto Rico gathered at San Juan, August 6, and organized the national "Liga de Defensa contra la Anemia." Seventeen of those present were physicians; the honorary presidency of the league was conferred on Dr. B. K. Ashford, with J. G. Martinez as acting president. Ashford advocated dividing the island into five to ten districts with a hospital of forty beds in a central station in each district and traveling dispensaries, going from village to village until treatment, advice and the principles of sanitary living are imparted to every corner of the island and every inhabitant. The league intends to solicit the further aid of the government and collect subscriptions for the work, and have every physician enrolled in its membership. Weekly lectures are to be given, explaining to the people the necessity and means of preventing uncinariasis. The league also plans to publish circulars and distribute annual prizes to those who distinguish themselves in propaganda and investigation.

Confusion in Smallpox Statistics in Germany.—Official declaration of cases of smallpox is compulsory for physicians in Germany, but as so very few of them have ever had a chance to see a case of the disease, it is frequently difficult for them to recognize it. This fact renders more astonishing a recent statement in the Paris *Progrès Médical*, with comment in other French exchanges, to the effect that during the last few months 2,726 cases of smallpox have occurred in Prussia, with 1,534 deaths. The figures are those of the epidemic of cerebrospinal meningitis, and our French exchanges evidently did not recognize the familiar disease under its German name of *Genickstarre*. This term means stiffness of the neck, and is another instance of the habit which scientists so often have occasion to deplore—the use by the Germans of colloquial terms in the titles of scientific writings, which foreigners are unable to recognize without a dictionary. The term cerebrospinal meningitis is common to all languages nowadays and it is freely used in Germany, but the popular term *Genickstarre* is still often used, and to the confusion of French editors in this case.

Monument to Semmelweis.—A committee has been formed at Budapest to collect subscriptions for a monument to I. P. Semmelweis, in honor of his work on the etiology of puerperal fever. He was born in that city in 1818, and was resident physician at the Vienna Maternity when he noted the resemblance between fatal pyemia from a scratch at the dissecting table and fatal puerperal fever. He ordered all the students to wash their hands in a solution of calcium chlorid before examining a lying-in patient, and with this order reduced at one stroke the number of cases of puerperal fever to the minimum. Dr. Oliver Wendell Holmes in this country had announced, a short time before, that puerperal fever was infectious. This was probably unknown to Semmelweis. His discovery was not announced and did not become generally known until several years after, when it was published abroad by a general practitioner and a dermatologist of Vienna. Semmelweis' first article on the subject appeared not long after in Hungarian, but the world knew little of it until 1860, when he published a large work in German on the etiology and prevention of puerperal fever. He died in an insane asylum at Vienna in 1865. Two biographies of him have recently been published, one in English and one in German. The latter, although incorrect in some points, gives a good picture of the man and his life work.

Dangers of Medical Certificates.—A certain Belgian physician has been the defendant in a suit for damages which has been dragging through the courts for four years, until recently dismissed. The plaintiff did not have the slightest grounds for his suit, but he was able to keep it in the courts and barely missed gaining his point. He was enabled to do this by certificates furnished him by thoughtless physicians, testifying that he was the victim of a nervous affection "apparently due to an operation on the testicle in 1898, performed by some empiric," or "the result of a badly treated testicular affection." A third certificate stated that the nervous affection was the "result of an operation on the testicle in 1898." These certificates had been given him by thoughtless hospital physicians, who commiserated his condition and accepted without investigation his statements that the operation on the testicle had been the source of his ills. The plaintiff, who had performed the operation, was an interne at the time, and the operation was skillfully done. The patient then had already been under treatment for the nervous affection which he attributed later to the operation. He could not have obtained a hearing in the courts if it had not been for the certificates he produced from three medical authorities who allowed their philanthropic emotions to blind them to the necessity for cautious investigation of the case. In delivering such a certificate, the *Gazette méd. Belge* comments, the possible injury to a third party should always be borne in mind, and the applicant's statements should not be accepted without investigation.

Cholera in Europe.—Our Russian exchanges under the heading of "Epidemics," mention the yellow-fever situation at New Orleans and the plague in India, but have nothing to say in regard to any epidemic diseases in Russia except that 14 cases of epidemic cerebrospinal meningitis were reported throughout the entire empire during July. Our German exchanges state that the cholera-infected region in northeastern Prussia is enlarging, and that new cases have been found on some of the other waterways besides those first infested. So far, the disease has been confined to raftsmen coming through from Russia and persons in contact with them. Up to August 30, 20 cases suspicious of cholera had been reported to the authorities, and bacteriologic examination showed that 12 were true cholera, with 6 deaths. A third case has been discovered at Hamburg. The epidemic in Germany has reached a total of 202 cases, with 77 deaths, according to cable reports dated September 18. The record for the twenty-four hours preceding was 3 new cases and 1 death. Sixteen districts have been declared infected and precautionary measures taken. The *British Medical Journal*, editorially, states that the responsibility which rests on Germany at the present is very great. Practical sanitation in the remote, small towns is still in a very backward state, and the conditions across the border in Russia are still worse. The British and American authorities are on the alert defensive, and are enforcing the measures which proved successful in warding off cholera during the previous epidemics in Europe.

Revolution in Nursing in France.—THE JOURNAL has mentioned several times the expressions of wonder and admiration lavished by French medical visitors on the trained nurses of America and England. Nothing like the trained nurses of these favored lands has hitherto been known in France. The hospitals offer no accommodations suitable for gentlewomen, and the profession of nurse has therefore never appealed to this class of women seeking a means of self-support. For centuries the nursing was done by sisters of charity, and only comparatively recently have the hospitals been laicized. A beginning has now been made that promises a revolution in nursing methods, and the *Journal de Méd. de Paris* proudly asserts that it is no longer necessary for the French physi-

cian to expatriate himself to behold a model training school for nurses. The physician, Dr. Lande, who is mayor of Bordeaux, has succeeded in organizing in the new city hospital, the Tondu, a training school for nurses on the latest and most approved lines. Its success has been marvellous, the editorial adds, during the year since it was organized; "the patients themselves seem transformed. One can read in their eyes their delight in being surrounded by kind, devoted and sympathetic young women in an atmosphere of physical and moral cleanliness." The *American Journal of Nursing* states that this revolution is due in great part to Dr. Anna Hamilton, who ten years ago took charge of the nursing and founded a training school for nurses at the Protestant Hospital at Bordeaux. Her graduates are now ready to carry the reform to other hospitals. In Paris another group of women has established a small model training school for nurses in the heart of Paris, connected with two private hospitals. It is a striking object lesson for the authorities in charge of the public hospital work, and will no doubt aid effectually in the revolution now going on in hospital nursing in France.

Campaign Against Yellow Fever in Mexico.—Isolated cases of yellow fever still occur in Mexico and will probably continue to occur here and there, but the prompt, systematic and radical measures taken stamp out the disease before it has a chance to develop into an epidemic. In his official report for 1904 Liceaga, chief of the National Board of Public Health, states that during 1903 and 1904 there were 699 cases throughout the entire republic, and 147 deaths. From September, 1903, to January, 1905, house-to-house visits were made to the number of 1,081,177, and 751 immune persons and 99,372 non-immune were taken in charge. The number of inspections of deposits of water was 126,081, and inspections of immune persons, 455,801; of non-immune, 678,009; of travelers arriving, 10,073, and of travelers leaving, 12,314. Nearly 4,500 dwellings, 67 ships and 1,813 railroad cars were disinfected; 237,521 collections of water were drained away or treated with kerosene. Disinfection of the loosely-built native huts is a difficult matter. He found that the mosquitoes were able to escape by the smallest outlets. In one of his tests ten mosquitoes were placed in a small air-tight room which was then fumigated. A cover had been placed over the keyhole outside. Seven of the mosquitoes were found dead in the room, but the three others were found in the cover over the keyhole. In one experience in a fortress, where the windows formed long passages through the thick stone walls, the mosquitoes sought refuge in the depths of these windows, and the air in them prevented the entrance of the sulphur fumes. When the windows were opened the mosquitoes escaped alive. As soon as sulphur was set to burn in each separate window passage the epidemic of yellow fever ceased at once. He closes the native huts mosquito-tight with a cloth covering outside. A strip of canvas is carried from the foot of the wall to the eaves and here supported by a bar of wood on uprights. It is then carried over the roof and down the other side to the foot of the wall. Other strips are applied in the same way, lapping over the first, until the sides and roof of the hut are covered. The front and rear are then covered with strips sewed together to make a solid sheet, sewed also to the first of the strips passing over the sides and roof. This insures the killing during the sulphur fumigation not only of the mosquitoes, but also of all the other insects that had found shelter in the structure. Liceaga adds that the general mortality of Vera Cruz has been much reduced by the sanitary and prophylactic measures undertaken there in the campaign against yellow fever. It was only 1,858 in 1904; in 1903 it was 2,566. The deaths from yellow fever were reduced from 375 in 1903 to 12 in 1904, and four of the latter were imported cases.

Pharmacology

Scientific Work Misrepresented and Commercialized.

In pursuance of the deliberately assumed purpose to enlighten the physicians of the United States on all features of the traffic in proprietary remedies, there will be offered to our readers not only information regarding the composition of such remedies, but also facts concerning the methods of their advertising and sale, which come to light in such shape as to be of service to the profession. No firm or product will be subjected to attack, but publicity will be given to all facts obtainable. Having in mind this purpose the following recital of facts is offered to the profession as an illustration of methods employed in the proprietary trade, and as a step in the era of pharmaceutic publicity.

Under date of Dec. 1, 1904, there was published by the government of Porto Rico a "Report of the Commission for the Study and Treatment of 'Anemia' in Porto Rico." The splendid scientific results of this study of uncinariasis we commented on editorially[1] February 11, page 478. A few weeks ago the M. J. Breitenbach Company of New York circulated among physicians what purports to be an abstract of this report, claiming that "this report alone would suffice to establish pepto-mangan at once as the foremost hematinic known." Physicians, of course, realize that no other proprietary firm ever had so many "original" "write-ups" inserted in the reading pages of medical journals. It may fairly be said that the medical press has been subsidized by the Breitenbach Company to an extent equaled by no other. So in this instance, medical journals have recently been publishing as "reading notices," or as "publishers' notes," extracts from the company's pamphlet, especially made for the purpose. The Breitenbach Company having, as quoted, staked so much on the results of the commission's use of "pepto-mangan (Gude)," it becomes a matter of medical importance to look into the facts.

The commission treated, so far as covered in this report, 5,490 cases of uncinariasis. Of these it presented in detail the clinical histories of 61 cases. In 18 of these 61 cases the commission administered "pepto-mangan (Gude)," which had been donated by the Breitenbach Company. Of these 18 cases the Breitenbach Company says they "were selected on account of their extreme severity, and thus these cases represent the most crucial test to which any iron preparation can be subjected." Further, we are told: "The results obtained point so distinctly to the supremacy of "pepto-mangan (Gude)," etc., and "the report may be regarded as a supreme test" and "as a triumph for pepto-mangan (Gude)."

With these claims before us it is more than interesting to analyze the reports of the cases from which they are drawn. In 14 of the 18 "pepto-mangan (Gude)" cases that combination was the only iron preparation used; in the remaining 4 Blaud's pill was used during the latter part of treatment. In the other 43 cases (not mentioned in the Breitenbach pamphlet) the iron was administered in the form of Vallet's mass or Blaud's pill, either or both, with the exception of two cases in which no iron was used. In closing its report the commission notes that iron alone without expulsion of the uncinaria is of little benefit and plays a part secondary to anthelmintics. Therefore, in this "supreme test," the relative value of the hematinic used will be largely determined

1. This editorial brought from the Breitenbach Company a letter addressed to THE JOURNAL of the American Medical Association, which is worth quoting in this connection, and also in connection with the correspondence with the *Medical Record*, which follows. The italics are ours.

"It seems to us, in looking over the issue of your journal for Feb. 11, that the editorial department of your publication is quite at variance with your advertising pages. A short while ago we sent you a new electrotype stating that peptomangan was particularly applicable to the anemia of uncinariasis, and produced positive results if administered after proper treatment for the expulsion of the parasite. We did not make this statement until we had had conclusive proof from tests made by eminent men in the profession that such was the case. We make no haphazard statements ourselves. *It is evident that either your editors do not read the advertising pages of your journal, or they wish to make a direct slap at one of their advertisers, and we can hardly see how it is to be any advantage for us to place an advertisement with you, if in the editorial pages you are going to directly contradict our statement.* We refer to your editorial on page 478, in which you make the statement, 'The day of blind *reliance on iron, quinin and tonics in general in the treatment of anemic conditions in tropical countries is past, never to return,*' and this in the face of our advertisement for which we pay you. It looks to us a little like taking our money and in turn going out of your way to slap us in the face, for had that paragraph been omitted from your editorial, we think you will agree with us that the value of the article would in no way have been lessened, and we should feel in a very different frame of mind than we do now. Had it been written by one of your contributors we would have let the statement pass, and set it down to ignorance, but coming as it does from your editors, *who should be thoroughly conversant with the advertisements you carry*, we can not but feel that it is *very unfriendly* toward us.

"We shall be glad to hear from you on the subject."

by the time consumed in relieving the symptomatic anemia after removal of the parasitic cause.

Analyzing the 61 cases the following facts come to light, and it should here be noted that nothing in the original report indicates the "extreme severity" of the "pepto-mangan (Gude)" cases as compared with those in which other iron preparations were used. For the present purpose it is sufficient to compare the "pepto-mangan (Gude)" cases with those in which Blaud's pill alone was used:

	Cases.	Av. time of treatment. Days.
"Pepto-mangan (Gude)" cases reported cured	9	79.77
"Pepto-mangan (Gude)" cases reported cured in which Blaud's pill was used in latter part of treatment	5	74.8
Blaud's pill cases reported cured.	26	49

Two "pepto-mangan (Gude)" cases were reported "improved" in an average treatment time of 87 days, while the other two were fatal cases. This "supreme test" then shows that the patients treated with Blaud's pill recovered from the anemia in less than two-thirds of the time required when "pepto-mangan (Gude)" was used. On this point the commission itself says (page 119): "Thus it is quite difficult to accurately judge the comparative value of different iron preparations, yet it is noticed, even by some patients, that Blaud's pill gave more rapid results."

In the face of these clinical facts and of this plain declaration from the commission, the physician may well ask: Why in the name of prudence did the Breitenbach Company circulate a pamphlet and advertise in medical journals a claim that "this report alone would suffice to establish pepto-mangan at once as the foremost hematinic known?" As the report actually draws a contrary lesson, the course of the company can only be explained either as due to its exaggerated confidence in the credulity of physicians or to its own neglect to read the report before abstracting it. Which hypothesis is most probable? Physicians who have read the "write ups" of "pepto-mangan (Gude)" appearing in nearly all the medical journals of the country will have no difficulty in answering this question. Lastly, what of the honesty of circulating among medical men so misleading a document?

The Medical Record and the Propaganda Against Nostrums.

A little while ago the New York *Medical Record* contained a two-page advertisement of the Etna Chemical Company, which evidently was intended to counteract the effect of the report of the Council on Pharmacy and Chemistry which showed phenalgin to be a simple acetanilid mixture. Still more recently the same journal contained another two-page advertisement, one of which was occupied with a cartoon intended to cast ridicule on the efforts being made against the nostrum evil. Since these advertisements appeared in a scientific medical journal and a journal that is supposed to represent intelligent physicians, one might charitably suppose that they were admitted through lack of supervision. Such does not appear to be the case, however.

Under date of September 8, the editor of THE JOURNAL of the American Medical Association sent the following letter to the *Medical Record:*

To the Editor:—

Your issue for last week, September 2, contains a two-page advertisement of the Etna Chemical Company relating to their preparation, phenalgin. One page is entirely taken up with a cartoon evidently intended to deride THE JOURNAL of the American Medical Association, the Council on Pharmacy and Chemistry of the American Medical Association, and the propaganda against nostrums. The other page contains what is presumed to be an answer to the official announcement of the Committee on Chemistry regarding its investigation into certain preparations offered to the profession and to the public, especially as it is related to phenalgin. Permit me to quote from the advertisement as it appears on advertising page 21 of the *Record:*

"Recently certain ill-advised persons have attempted to confuse Phenalgin with patent and quack Nostrums and have so far succeeded that the influence of the Journal of the American Medical Association has been brought to bear against our legitimate and ethical business."

"We believe that Commercialism of the rankest kind has dominated this absurd crusade against us. These people may call Phenalgin a mixture, or a compound, or anything that pleases them; it does not in the least change the fact that Phenalgin is just what we have always said it to be."

"We know that doctors who are practicing medicine and prescribing Phenalgin will continue to do so regardless of the reports of alleged analytical chemists whose experience in the sick room is an atom of a myth compared with that of those who are continually using our product."

My object in writing you is to briefly state certain facts solely for the information of your readers.

What the Council on Pharmacy and Chemistry of the American Medical Association is and what its functions are are well known to your readers. While the council has been outlining plans for work, making investigation into various products, it has published but one official report: this was on six preparations, viz.: ammonol, antikamnia, Koehler's headache powders, orangeine, phenalgin and salacetin (sal-codeia-Bell). The report on phenalgin was as follows:

"According to the analyses of the contents of the original sealed packages as purchased, this was found to be a mixture, and to contain the following ingredients approximately in the proportions given:

Acetanilid.	Sodium bicarb.	Ammonium carb.
57	29	10

"Certain packages of phenalgin were purchased which on analysis did not show ammonium carbonate."

The committee signing the report[1] and vouching for its truthfulness consisted of:

J. H. Long, M.S., Sc.D., professor of chemistry in the Northwestern University Medical School and director of its chemical laboratories, the author of "A Text-book of Physiological Chemistry" and other works on chemistry, and, last year, president of the American Chemical Society;

W. A. Puckner, Ph. G., professor of chemistry in the School of Pharmacy of the University of Illinois, and a contributor of scientific articles to chemical journals;

S. P. Sadtler, Ph.D., professor of chemistry in the Philadelphia College of Pharmacy, author of "A Text-book on Chemistry," associate editor of the U. S. Dispensatory, and a member of the Committee on Revision of the U. S. Pharmacopeia;

Julius Stieglitz, Ph.D., professor of chemistry in the University of Chicago, a man of wide repute as a chemist, and the author of several works on chemistry; and

H. W. Wiley, M.D., Ph.D., chief of the Bureau of Chemistry of the Department of Agriculture, Washington, D. C.

Besides the above, other chemists assisted in the work, and the following made analyses of phenalgin:

H. M. Gordin, Ph. D. (Berne), professor of chemistry in the School of Pharmacy of the Northwestern University, who has done a large amount of original

1. The Journal A. M. A., June 3, 1905, p. 1791.

work, as his contributions to chemical literature will show; and

Max D. Slimmer, B.S.M.A. (University of Chicago), Ph. D. (Berlin), who has several fellowships in chemistry in the University of Chicago, who has done considerable original work in chemistry, and who is recognized as an honorable and capable analytical and consulting chemist.

These are the gentlemen referred to in the advertisement in the *Medical Record* as "alleged analytical chemists."

In a former advertisement the Etna Chemical Company says: "We protest against the Association of Phenalgin in that publication" (meaning THE JOURNAL of the American Medical Association) "with patent medicines and nostrums as an uncalled-for insult to a reputable American Manufacturing Chemical Industry."

In this statement, the Etna Chemical Company gives physicians the right to ask whether it is "reputable" to inveigle them into prescribing a simple acetanilid mixture under the supposition that it is a definite synthetic chemical substance and to charge a dollar an ounce for a preparation the ingredients of which cost less than five cents.

There is, however, one assertion made in the advertisement which, I think, is well taken. The preparation is certainly not now a "secret remedy," for the Council on Pharmacy and Chemistry has cleared up all doubts as to the composition of "ammoniated-phenylacetamide."

Since you did not see fit to publish, or mention, the report referred to above, but have allowed your advertising pages to be used to slur the Council on Pharmacy and Chemistry of the American Medical Association, as well as THE JOURNAL of the American Medical Association, I think it only fair to your readers that they be informed of the facts in the case, as far as they refer to phenalgin. I, therefore, ask that you kindly publish this.

To the above the editor of the *Medical Record* replied under date of September 12:

> It has always been the aim of the editor of the *Medical Record* to keep the editorial and advertising pages of the journal entirely distinct, and in continuing that policy I am forced regretfully to return your letter replying to an advertisement in the issue of September 2. If there should at any time be anything in the reading pages of the *Medical Record* relating to you or the Association whose interests you guard so well, to which you might take exception, I promise you the opportunity to reply fully and freely; but I am not responsible for what appears in the advertising pages, and can not open the correspondence department to letters in commendation or condemnation of anything appearing in that part of the journal. I regret the seeming discourtesy to you, but you surely can see to what abuses it might lead were correspondents permitted to discuss in the reading pages the statements made by advertisers.
>
> THOMAS L. STEDMAN.
>
> P. S.—If you publish this letter in your own journal or elsewhere, I trust you will, in justice to the *Medical Record* and to me, publish also this letter giving my reason for refusing you the hospitality of our columns. T. L. S.

We are very glad to know that "the editorial and advertising pages of" the *Medical Record* are "entirely distinct." Since antikamnia, ammonal, phenalgin and salacetin, in the form of sal-codeia-Bell, each occupies from a half to a page in the *Record*, some physicians were unkind enough to insinuate that this was the reason the editor totally ignored the report which exposed these preparations. Dr. Stedman's letter shows that this could not be, since the editorial and advertising departments are "entirely distinct."

Preying on the Sick.

The moral principle governing the action of secret proprietary and patent medicine men is an unknown quantity; sometimes it would seem to be a negative one. Just how much lower in the scale of humanity a man can go than to prey on the fears of a people in the time of a terrible epidemic for the sake of a few dollars we do not know. There may be something more despicable, but what is it? Two weeks ago we referred to the cold-blooded methods of the peruna people; this week we reproduce an advertisement from the New Orleans *States* that tells another story of man's inhumanity to man.

Hydrozone
Is a
Positive Preventive of
Yellow Fever
A scientific, absolutely harmless germicide, universally indorsed and successfully used by the best physicians. You can absolutely safeguard yourself against the fever by taking a teaspoonful of Hydrozone in each tumbler of water you drink. Sold by best druggists. None genuine without my signature.
Charles Marchand
63 E Prince Street, N. Y.
FREE—Send for "How to prevent and cure disease" and special instructions how to avoid and cure YELLOW FEVER.

This brings up the problem that we are trying to solve, viz.: "What is the difference between a 'secret proprietary medicine' advertised in medical journals to physicians, and a 'patent medicine' advertised in newspapers to the public." Hydrozone is being advertised in nearly all medical journals, and at the same time in the newspapers. Where shall we place it? And if hydrozone, with the methods recently adopted to exploit it, is tolerated in the medical press, why not peruna?

Tongaline and Yellow Fever.

Tongaline, too, is good for yellow fever if we are to believe the absurd claims made by its enterprising salesmen. Here is the advertisement from current medical journals:

> "*Stegomyia fasciata* has produced an epidemic of yellow fever in certain sections of Louisiana and adjoining states.
>
> "*Stegomyia punctata* has inoculated thousands with virulent malarial germs throughout the balance of the Mississippi Valley.
>
> "Tongaline, Mellier, in one of its forms as indicated, antagonizes and destroys the effects of these parasites on account of its extraordinary eliminative action on the liver, the bowels, the kidneys and the pores, whereby the poison is promptly and thoroughly expelled. For full literature, etc."

Correspondence

Patent Medicines: A Good Suggestion.

ROGERSVILLE, TENN., Sept. 13, 1905.

To the Editor:—Under separate cover I am to-day mailing you a marked copy of the *Rogersville Review*, a weekly newspaper published in this, a town of about 3,000 inhabitants. I have had the editor copy your editorial[1] of September 2 on

1. "A Miserable Outrage," The Journal, Sept. 2, 1905, p. 722.

the patent medicine fraud as it prevails in the United States with special reference to peruna. These little weekly papers circulate among the rural people, where every issue is read through, ads and all alike. I would suggest that you induce every member of the American Medical Association to have this or some like article occasionally brought out in his home paper. Surely all the physicians of a town would have sufficient influence with their local paper to do this. I assure you that it would work wonders. The people at large have never heard anything but praise of these nostrums, and they fully believe that the ads are written and sanctioned by the medical profession.

This plan would doubtless not work in the larger cities where the advertising bills are large, but it could very easily be done with the small daily and weekly papers, published in villages and towns, as you will see. I propose to have some articles of the kind appear every week. The sums paid these small papers for carrying patent medicine ads is a mere pittance.

J. E. MILLER, M.D.

Marriages

FRANCIS J. PETER, M.D., to Miss Laura Jordan, both of Omaha, August 16.

HARRY E. ALDERSON, M.D., to Miss Cordelia Bishop, both of San Francisco, September 26.

ARNOLD BRANDT, M.D., Seattle, Wash., to Miss Ethel Tope of St. Louis, Mo., September 6.

WILLIAM W. JARRELL, M.D., Thomasville, Ga., to Miss Sadie Luff of Nashville, Tenn., September 6.

FRANK EDMOUNDSON NABERS, M.D., to Miss Bevelle Comer, both of Birmingham, Ala., September 6.

GEORGE LONE EVERALL, M.D., Clinton, Iowa, to Miss Amy Mabel Ford, at Evanston, Ill., September 12.

WILLIAM WATSON MCKIBBEN, M.D., to Miss Olive Beatrice Flint, both of Worcester, Mass., September 11.

THOMAS FRANCIS CONEEN, M.D., to Miss Jane Cecilia Cunningham, both of Portland, Maine, September 4.

GEORGE THOMAS RANKIN, M.D., Akron, Ohio, to Miss Anna Allison Jones of Zanesville, Ohio, September 12.

EDWIN HEDDON SHEPARD, M.D., Syracuse, N. Y., to Miss Edna Mitchell of Hornellsville, N. Y., September 7.

JAMES MATTHEW BOOHER, M.D., to Miss Retta Kelly Brown, both of Louisville, Ky., at Jeffersonville, Ind., April 9.

JAMES T. JELKS, M.D., Hot Springs, Ark., to Miss Belle McKaskle, Pony, Mont., at Butte, Mont., September 7.

JOHN H. GILPIN, M.D., Fort Wayne, Ind., to Mrs. Fred Lochrane of Montgomery, Ga., at Cincinnati, September 16.

CHARLES R. CHAPMAN, M.D., Springfield, Mass., to Miss Hazel Vivian Sheffield of Chicago, at Winona Lake, Ind., September 6.

Deaths

John G. Park, M.D. Harvard University Medical School, Boston, 1866, member of the Massachusetts Medical Society; acting assistant surgeon in the Navy during the Civil War; superintendent of the Worcester City Hospital in 1871; from 1872 to 1877 assistant superintendent of the State Insane Hospital; from 1877 to 1879 on the staff of the Hospital for the Chronic Insane, and from 1879 to 1890 superintendent of the Worcester Insane Hospital, and thereafter a citizen of Groton, Mass., died in the Worcester City Hospital after an operation for gallstones, August 29, aged 67.

Thomas Menees, M.D. Transylvania University Medical Department, Lexington, Ky., 1846, one of the most eminent physicians of the South; a member of the Confederate congress and for many years a professor of obstetrics in the medical department of the University of Nashville and of Vanderbilt University, died at his home near Nashville, September 7, aged 82.

James W. Jackson, M.D. University of Louisville Medical Department, 1873, formerly of Cocoanut Grove, Fla., but recently a resident of Sherman, Texas, died in the North Texas Hospital for the Insane, August 23, from injuries alleged to have been inflicted by attendants in the asylum, who were arrested on the charge of murder.

James M. Gist, M.D. Medical Department of the University of Nashville (Tenn.), 1860, surgeon in General McRae's brigade, C. S. A., during the Civil War, twice a member of the state legislature and very prominent in White County, Ark., died at his home in Beebe, September 10, after a short illness, aged 71.

Colin P. Dewar, M.D. McGill University Medical Department, Montreal, 1882, a member of the Canadian Medical Association and past president of the Ottawa Medico-Chirurgical Society and of the Ottawa Medical Society, died at his home in Ottawa, Ont., September 7, from uremia, after an illness of five days, aged 40.

Hiram H. Russell, M.D. Starling Medical College, Columbus, Ohio, 1863, assistant surgeon of the One Hundred and First Ohio Volunteer Infantry during the Civil War, and later of the One Hundred and Thirty-eighth Infantry, O. N. G., died at his home in Hyde Park, St. Joseph, Mo., September 10, after a lingering illness, aged 70.

Lyman Potter, M.D. Starling Medical College, Columbus, Ohio, 1850 one of the oldest and most respected practitioners of Delaware County, Ohio, for many years a member of the Delaware County Medical Society, died from senile debility at his home in Leonardsburg August 29, after a decline of three months, aged 93.

Benjamin T. Kneeland, M.D. Geneva (N. Y.) Medical College, 1851, formerly of Dalton, N. Y., surgeon of the One Hundred and Thirtieth New York Volunteer Infantry during the Civil War and at its close brevet colonel, died at his home in Nunda, N. Y., September 3, from senile debility, aged 80.

Alexander D. Mackenzie, M.D. University of the State of Oregon Medical Department, Portland, 1894, of Portland, for several years secretary of the Portland Medical Association, died at St. Vincent's Hospital, Portland, from tuberculosis, August 25, after an illness of five months, aged 45.

B. Frank Park, M.D. Rush Medical College, Chicago, 1901, a member of the American Medical Association, a rising young physician of Omaha, and an instructor in the Omaha Medical College, died suddenly while making a professional call September 8, from cerebral hemorrhage, aged 28.

John H. Rhodes, M.D. Louisville (Ky.) Medical College, 1880, city physician of Jackson, Miss., a member of the State Board of Health, and president of the Jackson Sanitarium, died suddenly near his home in Jackson August 30, from heart disease, aged 45.

Charles C. Rubless, M.D. College of Physicians and Surgeons in the City of New York, 1873, for many years health officer of Morrisville, Vt., died at his home in that place September 11, from diabetes, after an illness of several years, aged 53.

Thomas Gilfillan, M.D. Berkshire Medical College, Pittsfield, Mass., 1855, a member of the Massachusetts Medical Society, and a surgeon in the army during the Civil War, died at his home in Northampton, Mass., September 9, aged 75.

Samuel Jackson, M.D., assistant surgeon United States Navy, commissioned in 1838 and retired in 1879, with rank of commodore, died at his home in Washington, D. C., July 22, from apoplexy, after an illness of two weeks, aged 88.

Gustavus A. Richardson, M.D. New York University, New York City, 1875, Hyattsville, Md., died at the Railroad Y. M. C. A. Hospital, Hagerstown, Md., September 1, from nervous collapse after an illness of several weeks, aged 60.

Thomas W. Poole, M.D. University of the Victoria College, Coburg, Ont., 1865, said to have been the oldest practitioner and once mayor of Lindsay, Ont., died at his home in that place August 28, after a lingering illness, aged 74.

E. Algo Donmyer, M.D. Baltimore Medical College, 1896, of Herington, Kan., while riding on a freight train near Enterprise, Kan., September 7, lost his balance, fell from the train and broke his neck, causing instant death.

Isaac Emmett Nicholson, M.D. Bellevue Hospital Medical College, New York City, 1894, died at his home in Oakland September 9, from cerebral embolism following typhoid fever, after an illness of two weeks, aged 34.

Frederick T. Lape, M.D. College of Physicians and Surgeons, Baltimore, 1896, formerly of Poughkeepsie, N. Y., died at the home of his parents in Athens, N. Y., September 4, from tuberculosis, after a long illness, aged 29.

Hugh L. Tobin, M.D. Jefferson Medical College, Philadelphia, 1880, twice physician at the state penitentiary, Frankfort, died from inflammation of the bowels at Pope Sanitarium, Louisville, September 14, aged 44.

James C. Lovejoy, M.D. Rush Medical College, Chicago, 1848, a pioneer settler of Greene County, Iowa, died at his home in Rippey, Iowa, September 6, from cerebral thrombosis, after an illness of two weeks, aged 87.

James W. Karr, M.D. University of Louisville Medical Department, 1848, a resident of Hickory Withe, Tenn., for 72 years and a practitioner in that place for 55 years, died at his home August 27, aged 79.

Christopher C. Jacobs, M.D. Bellevue Hospital Medical College, New York City, 1886, a member of the Medical and Chirurgical Faculty of Maryland, died at his home in Frostburg, Md., September 12, aged 54.

Eugene William Dickinson, M.D. St. Louis, 1891, formerly an attendant at the Topeka State Hospital, died in Topeka, Kan., September 6, after an illness of fourteen hours, from apoplexy, aged 33.

Dennis Lincoln Russell, M.D. Rush Medical College, Chicago, 1872, assistant surgeon during the Civil War, died at his home in Rushville, Ill., September 5, after a long illness from dropsy, aged 70.

John Jay Richards, MD. Medico-Chirurgical College, Kansas City, Mo., 1901, formerly of Agra, Okla., was accidentally shot and killed while hunting near Nevada, Mo., September 7, aged 28.

Rebecca Barnard, M.D. Woman's Medical College of the New York Infirmary, New York City, 1878, died recently at her home in Worcester, Mass., and was buried September 12.

Samuel C. Beard, M.D. University of Virginia Medical Department, Charlottesville, 1853, died at his home in Lewisburg, W. Va., from disease of the stomach, August 26, aged 73.

John N. Dunlap, M.D. University of Virginia Medical Department, Charlottesville, 1843, a pioneer physician of Saline County, Mo., died at his home in Miami, August 27.

Ernest Fruh, M.D. Jefferson Medical College, Philadelphia, 1886, of Philadelphia, died suddenly in a street car in that city September 7, from heart disease, aged 53.

Albert Koebig, M.D. University of Strasburg, Germany, 1873, while despondent, shot himself through the heart at his home in Houston, Texas, August 30, aged 64.

Orville C. Nally, M.D. Western Pennsylvania Medical College, Pittsburg, 1900, died at his home in Stotesbury, Mo., September 6, from typhoid fever, aged 32.

Thomas S. Allan, M.D. Hospital College of Medicine, Louisville, 1882, died from consumption at his home in Bloomingdale, September 11.

Deaths Abroad.

K. Schweigger, M.D., the successor of von Graefe as professor of ophthalmology at Berlin, died at Berlin August 23, aged 75. He retired from his official post on account of ill health in 1900. He published the *Archiv f. Augenheilkunde* and numerous text-books and special articles, and his perimeter and method of advancement, resection of the optic nerve and modification of cataract operations ensure him a prominent place in the history of ophthalmology.

O. v. Bungner, M.D., director of the Hanau Hospital and author of numerous articles on various branches of surgery and general pathology, died at Hanau, August 27, aged 47. One of his latest works was the collecting of data in regard to the importance of injuries of the tissues in the etiology of tumors.

Book Notices

TREATISE ON ORTHOPEDIC SURGERY. By Edward H. Bradford, M.D., Surgeon to the Boston Children's Hospital, Consulting Surgeon to the Boston City Hospital, Professor of Orthopedic Surgery, Harvard Medical School, and Robert W. Lovett, M.D., Surgeon to the Infants' Hospital and to the Peabody Home for Crippled Children, Assistant Surgeon to the Boston Children's Hospital, Assistant in Orthopedic Surgery, Harvard Medical School. Third Edition. Illustrated by 592 engravings. Cloth. Pp. vi-669. Price, $5.00 net. New York: William Wood & Company. 1905.

This edition differs from the edition published six years ago chiefly in arrangement, improved illustrations, and in the chapters on congenital dislocation, scoliosis, and coxa vara, as it is especially in these subjects that recent advance has been made. It is noteworthy that one of the authors has been a large contributor to this advance in congenital dislocation of the hip, while the other has borne the same relation to scoliosis; the sections on these subjects, therefore, are authoritative.

DISEASES OF THE HEART. A Clinical Text-Book for the Use of Students and Practitioners of Medicine. By Edmund H. Colbeck, B.A., M.D., B.C. (Cantab); F.R.C.P. (London); D.P.H. (Cantab), Physician to Out-patients at the City of London Hospital for Diseases of the Chest. With 43 Illustrations. Second Edition, Revised and Enlarged. Cloth. Pp. 350. Price, $2.50. Chicago: W. T. Keener & Co. 1905.

This book is an unusually complete and clear description of the heart and its diseases. Although small, the book is so concisely written that it contains an unusually large amount of information. It can be praised quite as much for its good arrangement, clearness and accuracy as for its fullness.

THE INTESTINAL CATARRHS, Being a Clinical Study of Colitis, Appendicitis and Their Allies; with a Special New Section on Sprue. By Edward Blake, M.D., Member of the Royal College of Physicians. Second Edition. Cloth. Pp. 356. Price, $2.00 net. Chicago: W. T. Keener & Co.

This book is full of interesting scraps of information, but it is most loosely constructed. As a treatise on intestinal catarrhs it is a failure. Almost every page is padded with such sentences as these: "But as in politics, my country first, afterwards my party. So in pathology, truth first, with the utmost tolerance of catholicity; then a view held with a loose hand."

The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending September 16:

Ford, Clyde S., asst. surgeon, reports on temporary duty at Fort McPherson, Ga., since September 6.

Morris, E. R., surgeon, on arrival at San Francisco, from Manila, P. I., ordered to Fort Slocum, N. Y., for duty.

Shepard, John L., asst. surgeon, left Army General Hospital, Presidio of San Francisco, on thirty days leave of absence.

Davis, Wm. B., deputy surgeon general, and Corbusier, Wm. H., deputy surgeon general, relieved from duty in the Philippines Division, to take effect October 15, 1905, and January 15, 1905, respectively.

Havard, Valery, asst.-surgeon general, Borden, William C., surgeon, and Gandy, Charles M., surgeon, are detailed to represent the Medical Department of the Army at the Fourteenth Annual Meeting of the Association of Military Surgeons of the United States, at Detroit, Mich., September 26-29.

Asst. Surgeons Samuel E. Lambert, Wm. H. Moncrief, Wm. T. Davis, Charles F. Morse, Clarence H. Connor, Nelson Gapen, Louis C. Duncan, and Philip W. Huntington (Dec. 15, 1905), Cary A. Snoddy, Samuel J. Morris, Harry S. Purnell, John W. Hanner, Horace D. Bloombergh, and Leon T. Lewald (Jan. 15, 1906), and Robert L. Carswell (Feb. 15, 1905), are relieved from duty in the Philippines Division, and will proceed to San Francisco on the transports sailing from Manila, on or about the dates designated after their names.

Asst. Surgeons William Roberts, Fort Hamilton, N. Y., Frank C. Baker, Presidio of Monterey, Cal., Robert M. Blanchard, Fort Thomas, Ky., William E. Vose, Fort Sheridan, Ill., Frank T. Woodbury, Plattsburg Barracks, N. Y., Edmund D. Shortlidge, Army and Navy General Hospital, Hot Springs, Ark., George F. Jeunemann, Fort Ringgold, Tex., De Loffre, Samuel M., Fort Schuyler, N. Y. (Nov. 5, 1905), Walter C. Chidester, Fort Lawton, Wash., James F. Edwards, Fort Leavenworth, Kans., Wallace DeWitt, Fort Washakie, Wyo., Robert B. Grubbs, Fort Wright, Wash., Charles R. Reynolds, Army General Hospital, Washington Barracks, D. C., Frederick A. Dale, Fort Walla Walla, Wash., McAndrew, Patrick H., Jefferson, Barracks, Mo. (Dec. 5, 1905), Allie W. Williams, Fort Greble, R. I., James I. Mabee, Fort Casey, Wash. (Jan. 5, 1906), are relieved from duty at the stations designated after their respective names, and will proceed to the Philippine Islands for duty, on the transports sailing from San Francisco on or about the dates specified.

McCall, James H., contract surgeon, leave of absence extended twenty days. Relieved from further duty at Fort Moultrie, S. C., and ordered to his home, Huntingdon, Tenn., for annulment of contract at expiration of leave of absence.

Lemmon, Robert, contract surgeon, left Fort McKinley, Me., and arrived at Fort Warren, Mass., for temporary duty.

Vaughan, Milton, contract surgeon, relieved from duty at Fort Crook, Neb., and ordered to his home, Little Rock, Ark. for annulment of contract.

Gardner, Fletcher, contract surgeon, granted an extension of twenty-four days to his leave of absence.

Koyle, Fred T., contract surgeon, granted leave of absence for one month.

Carpenter, Alden, dental surgeon, left Vancouver Barracks, Wash., on detached service to Fort Liscum, Alaska.

Kennedy, James S., contract surgeon, will, on abandonment of Fort Grant, Ariz., proceed to Fort Omaha, Neb. for duty.

Navy Changes.

Changes in the Medical Corps, U. S. Navy, for the week ending September 16:

Waggener, J. R., medical director, detached from the Navy Yard, Mare Island, Cal., and ordered home to wait orders.

Anderson, F., Medical Inspector, detached from the Marine Barracks, Washington, D. C., September 12, and ordered to the Navy Yard, Mare Island, Cal., for duty as Medical Officer of that yard and in command of the Naval Medical Depot.

McClurg, W. A., medical inspector, detached from the Bureau of Medicine and Surgery, Navy Department, and ordered to the Marine Barracks, Washington, D. C., September 18.

McCormick, A. M. D., surgeon, ordered to the Naval Academy.

Lowndes, C. H. T., surgeon, detached from the Naval Academy and ordered to the *Texas*.

Dunn H. A., P. A. surgeon, ordered to the Naval Proving Ground, Indian Head, Md., September 15.

The following assistant surgeons have been ordered to report at the U. S. Naval Medical School, Washington, D. C., September 30, for course of instruction: F. M. Shook, G. M. Olson, R. A. Warner, F. H. Brooks, E. O. J. Eytinge, P. R. Stahlnaker, F. S. Sellers, C. D. Munger, B. Elmore, H. T. Nelson, N. S. Hathaway, J. B. Mears, E. R. Marshall.

Farwell, R. G., asst.-surgeon, detached from the Brooklyn and ordered to duty on the second torpedo flotilla on the *Worden*.

Hart, G. G., acting asst.-surgeon, ordered to the *Glacier*.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service for the seven days ending September 13.

Banks, C. E., surgeon, to proceed to Montgomery, Ala., for special temporary duty.

Guiteras, G. M., surgeon, granted leave of absence.

Rosenau, M. J., P. A. surgeon, to proceed to New Orleans for special temporary duty in connection with the investigation of the cause of yellow fever.

Stansfield, H. A., P. A. surgeon, relieved from duty on Isthmus of Panama, effective August 23.

Stansfield, H. A., P. A. surgeon, to report to the director of the Hygienic Laboratory, Washington, D. C., for duty.

Trotter, F. E., P. A. surgeon, to rejoin his station, San Francisco, Cal.

Sweet, E. A., asst.-surgeon, relieved from duty at New Orleans and directed to proceed to Fort Stanton, N. M., for duty and assignment to quarters.

McMahon, R. L., acting asst.-surgeon, granted leave of absence for thirty days from August 15.

Marsh, W. H., acting asst.-surgeon, granted leave of absence for twelve days, from September 19.

Mason, W. G., acting asst.-surgeon, granted leave of absence for nine days from September 16.

Quigley, F. L., acting asst.-surgeon, granted leave of absence for seven days, from September 4, under paragraph 210 of the regulations.

Rodman, J. C., acting asst.-surgeon, granted leave of absence for one and one-half days, from September 13.

Safford, M. V., acting asst.-surgeon, granted leave of absence for three days, from August 29, under paragraph 210 of the regulations.

Sill, R. H., acting asst.-surgeon, granted leave of absence for seven days, from September 30, under paragraph 210 of the regulations.

Walerius, M., pharmacist, granted leave of absence for seven days from September 2, under paragraph 210 of the regulations.

Society Proceedings

COMING MEETINGS.

American Public Health Association, Boston, September 25-29.

Medical Society of the State of Pennsylvania, Scranton, September 26-28.

Association of Military Surgeons of the United States, Detroit, Mich., September 26-28.

American Roentgen Ray Society, Baltimore, September 28-30.

Colorado State Medical Society, Colorado Springs, October 3-5.

American Association of Railway Surgeons, Chicago, October 4-6.

Idaho State Medical Society, Boise, October 5-6.

Delaware State Medical Society, Wilmington, October 10.

Mississippi Valley Medical Association, Indianapolis, October 10-12.

Vermont State Medical Society, Burlington, October 12-13.

New York State Medical Association, New York City, October 16-19.

Kentucky State Medical Association, Louisville, Oct. 18-20.

AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY.

Tenth Annual Meeting, held at Buffalo, N. Y., Sept. 14-16, 1905.

Under the Presidency of DR. HANAU W. LOEB, St. Louis.

Officers.

The following officers were elected: President, Dr. Casey A. Wood, Chicago; vice-presidents, Drs. J. A. Stucky, Lexington, Ky.; Alvin A. Hubbell, Buffalo, N. Y., and Emil Mayer, New York; secretary, Dr. George F. Suker, Chicago (re-elected); treasurer, Dr. Otto J. Stein, Chicago (re-elected).

The place of next meeting will be decided by the council.

An address of welcome was delivered by Dr. Walter D. Greene, commissioner of health of Buffalo, which was responded to by the president.

President's Address.

PRESIDENT LOEB, after referring to the rapid rise of specialism, its divisions and subdivisions, devoted the rest of his remarks to the medicolegal aspects of certain cases of diseases and injuries and complications of the nose, throat and ear. The physician is called on to give his opinion and advice in certain cases as an expert in court. There are essential differences between the testimony of experts and that of ordinary witnesses. Fractures of the nose or involvement of the accessory sinuses may be the bone of contention in court. He cited several cases in point.

Vice-president's Address.

DR. DERRICK T. VAIL, Cincinnati, first vice-president, spoke of the medicolegal aspects of ophthalmologic cases, and said that expert testimony implied an accurate and detailed knowledge of the science of ophthalmology coupled with abundant practical experience, and a complete understanding of the plaintiff's condition. He cautioned against examining patients cursorily, as this may lead to a wrong diagnosis. Illustrative cases were cited. Every tissue and organ of the body should be carefully examined before expert testimony is given in court in regard to a given case. Cases of simulation call for great skill on the part of the oculist. He pointed out and emphasized the importance of the expert using simple language in court. Answers to questions should be short, pointed and given in understandable English at all times, if possible.

(To be continued.)

MEDICAL SOCIETY OF THE MISSOURI VALLEY.

Annual Meeting, held in Council Bluffs, Iowa, Aug. 24-25, 1905.

The President, DR. S. GROVER BURNETT, Kansas City, in the Chair.

DR. S. GROVER BURNETT, in his presidential address, entitled "Oslerism Bearded, or a Study of Age in Relation to Work," called attention to the fact that Dr. George M. Beard was entitled to priority in suggesting the uselessness of men above 40 years of age. Papers were read by Drs. Leroy Crummer, A. C. Stokes, W. O. Bridges, A. P. Condon and J. P. Lord, of Omaha; Fenton B. Turck and W. F. Waugh, of Chicago; Daniel Morton, St. Joseph; J. W. Kime, Fort Dodge, Iowa; Herman E. Pearse and C. H. Hardin, of Kansas City; T. M. Bogart, of Excelsior Springs, Mo.

On Thursday evening the society was entertained by the local profession at Lake Manawa.

An amendment to the constitution was read, changing the annual meeting to the first Thursday in September.

The secretary's report showed a healthy condition of the society, 41 new members having been added during the year.

The Buchanan County Medical Society extended an invitation to hold the next semi-annual meeting in St. Joseph in March, 1906, which was accepted.

Election.

The election of officers for the ensuing year resulted as follows: President, Dr. John E. Summers, Jr., Omaha; vice-presidents, Drs. C. H. DeWitt, Glenwood, Iowa, and C. B. Hardin, Kansas City, Mo.; treasurer, Dr. Donald Macrae, Council Bluffs (re-elected); secretary, Dr. Charles Wood Fassett, St. Joseph, Mo. (re-elected).

Therapeutics

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment are answered in these columns.]

Burns.

Van Zandt, in *Amer. Pract. and News*, states that nervous shock is the chief cause of death following burns if it occurs early. If the patient survives the first stage general intoxication is the chief factor, or death may occur from an intercurrent disease such as pneumonia, Bright's disease, erysipelas, pyemia, etc. A burn is a wound and demands as careful attention as a wound from any other cause, and the earlier a burn is dressed the better will be the results.

The alleviation of pain is the first thing to be given attention. In burns of the first degree, according to the author, this is best accomplished by dusting the parts with some alkaline powder or by lead water compresses or collodion dressing. If the burn is of the second or third degree it becomes a more serious proposition. Therefore, in selecting a dressing for burns two principles must be considered: The agent must cause no irritation and it must be antiseptic. After cleansing the surrounding skin and irrigating it with a 1 to 1,000 bichlorid solution or a 3 per cent. carbolized solution, the surface should be syringed with a solution of hydrogen peroxid (one part to six of water). The dangers from the use of poisonous antiseptics must be kept in mind. When the burn is extensive this author recommends dressing it by applying strips of rubber tissue one-half inch wide all over the surface of the injured area and extending well over the edges to the sound skin, and over this sterilized gauze and a bandage. When granulations are well started skin grafting is recommended.

In extensive burns the water bath of Hebra is advised, as it does away with the pain of changing dressings.

In burns of limited extent a protective dressing with carron oil, olive oil, white of egg, ichthyol (2 per cent.), resorcin, applied on pieces of sterilized gauze, is recommended.

Pieric acid is also mentioned as of service in different strengths, applied early in the disease before granulation begins. It is said to deaden the pain. The author, however, prefers the following combination for burns of any degree:

℞. Aluminis ..... ℥i 30
Acidi carbol..... ℥i 4
Ichthyol ..... ℥iiss 10
Liq. petrolati q. s. ad..... ℥vi 180

M. Ft. unguentum. Sig.: Apply locally.

[The foregoing is put in prescription form on the author's statement that he uses alum 15 per cent., carbolic acid 2 per cent., and ichthyol 5 per cent., in liquid petroleum as a base.]

In any case the author advises against dressing the wound too frequently unless there are special indications for it. He is opposed to dusting powders of any sort when the burn is beyond the first degree, because they are irritant in their action and tend to increase the amount of the discharge. The granulations forming over the burned areas must be protected and a perfectly healed wound will be the result, and there will be no deformity from the scar and no loss of function from contraction. The constitutional treatment consists of supporting measures and analgesics if required.

Meyers claims that it is bad surgery to cleanse any burn unless it contain sawdust. By scrubbing a burn the clots which have formed are removed and the wound then presents a good field for infection.

Block recommends a saturated solution of picric acid on cotton as a local application and close observation of the kidneys.

The following combinations are recommended by other authorities for local applications in the treatment of burns:

In burns of the first degree:

℞. Acidi carbol..... ℥ss 2
Olei lini
Aquæ calcis, āā..... ℥iv 120

M. Sig.: Shake well and apply on lint. Or:

℞. Acidi picrici..... ℥ss 2
Alcoholis ..... ℥i 30
Aquæ dest. ..... ℥xii 360

M. Ft. solutio. Sig.: Bathe the parts well with the solution, and follow it by an application of the solution on cotton. Or:

℞. Ext. opii..... gr. viiss 50
Ichthyoli ..... ℥iv 15
Liq. petrolati
Lanolini, āā..... ℥vi 24

M. Sig.: Apply locally on gauze in burns of the first degree.

In burns of the third degree *Merck's Archives* recommends the following:

℞. Ichthyoli ..... m. xlv 3
Olei olivæ ..... ℥ii 8
Lanolini ..... ℥iii 90

M. Sig.: Apply locally. Or:

℞. Olei amygdalæ exp.
Aquæ calcis
Lanolini, āā ..... ℥iii 90

M. Sig.: Apply for two days, two or three times daily, and follow with:

℞. Aquæ plumbi ..... ℥v 20
Liq. petrolati ..... ℥iv 15
Lanolini ..... ℥i 4

M. Sig.: Apply freely once daily.

In cases accompanied by excessive pain the following is recommended:

℞. Cocainæ hydrochlor..... gr. x 65
Liq. petrolati ..... ℥iii 12
Lanolini ..... ℥ii 8
Aquæ dest. ..... ℥v 20

M. Sig.: Apply freely on the painful surface.

Iron Acetate in Pneumonia.

Robson, in *British Med. Jour.*, recommends the following combination, containing the acetate of iron, in the treatment of pneumonia:

℞. Liq. ferri chloridi..... m. xv 1
Liq. ammon. acetatis..... ℥ii 8
Aq. chloroformi ..... ℥ss 15

M. Sig.: One such dose every four hours in water.

It may be given alternately every six hours with a mixture containing strychnia, as follows:

℞. Liq. strychniæ (1 per cent.)..... m. v 30
Aq. chloroformi ..... ℥ss 15

M. Ft. mistura. Sig.: One such dose every six hours.

The foregoing treatment should be kept up until the crisis has passed. He does not recommend quinin or antipyretics, and seldom prescribes digitalis. He recommends the treatment above outlined in severe cases of bronchopneumonia occurring in infants and children, and in catarrhal and lobar pneumonia occurring in debilitated patients.

Delirium Tremens.

In cases of delirium tremens, when the patient has reached the stage of alcoholic indulgence characterized by insomnia, great excitability and inability to retain food, the *Medico-Chirurg. Jour.* recommends that an active cathartic similar to the following be administered:

℞. Pulv. jalapæ co..... gr. x 65
Hydrarg. chloridi mitis
Sodii bicarb., āā..... gr. v 30

M. Chart. No. i. Sig.: To be taken at one dose.

Should the heart show any signs of weakness the following is recommended:

℞. Tinct. capsici
Tinct. digitalis, āā..... ℥iv 15
Tinct. nucis vom..... ℥ii 8
Spts. ammon. arom. q. s. ad..... ℥iii 90

M. Sig.: One teaspoonful in water every four hours.

In cases of extreme nervousness accompanied by insomnia, sedatives will be required, and in extreme cases a hypodermic of morphin.

Hyperidrosis.

The following combinations after Unna are recommended by the *N. Y. Med. Jour.* in the treatment of hyperidrosis:

Wash the affected parts with spirits of camphor or with weak solutions of vinegar and follow it with a local application similar to the following:

℞. Ichthyoli
Spts. terebinthinæ, āā..... ℥v 20
Ung. zinci oxidi ..... ℥x 40

M. Ft. unguentum. Sig.: Apply locally on retiring.

In the shoes the following may be sprinkled:

℞. Pulv. sinapis ..... ℥i 4
Pulv. talci..... ℥iv 120

M. Ft. pulvis. Sig.: To be dusted in the shoes.

When the hands alone are affected a half-teaspoonful of the following may be thoroughly rubbed into the hands after washing them:

℞. Tinct. belladonnæ..... ℥ss 15
Spiritus oderatus ..... ℥iii 90

M. Sig.: One-half teaspoonful to be rubbed into the hands two or three times a day.

Medicolegal

Immaterial Consultations of Physicians.—The First Appellate Division of the Supreme Court of New York says that the applicant for the life insurance sued for in the case of Valentini vs. Metropolitan Life Insurance Company stated that a certain physician was the one who last attended him, in 1898, for rheumatism, and that he had not been under the care of his physician within two years, unless as stated in previous line. His mother was named as beneficiary. And the consultation of another physician by the mother without the knowledge of the son, or a consultation with his knowledge when he was not suffering from any ailment or disease, the court holds, would not constitute either of his answers a breach of warranty. Again, the court says that it was manifest that a breach of warranty was not established as a matter of law. Assuming that the attendance of the other physician was within two years of the time when the answers were given, yet it was not made to appear that the assured was afflicted with any disease which called for medical attendance, or that it was other or different than a mere fear engendered in the mind of the mother that the son was in need of some medical attendance. It was made affirmatively to appear that the trouble at the most was a slight nervous twitching, which did not interfere with the physical vigor of the insured, or with his ability to attend to his business. The purpose of the question and answer was to inform the company as to the physical condition of the applicant and his probable duration of life and before the court is justified in holding that there is a breach of warranty it must appear that attendance by a physician had been for some substantial disorder, and not for a mere functional and temporary indisposition. This the evidence failed to establish, and the court was not, therefore, justified in determining the question as matter of law.

A Supreme Court on a Low Age of Consent.—The Supreme Court of Mississippi takes occasion, as it says, in Dickey vs. State, to express its opinion concerning the wisdom and justice of the conclusive presumption of law (as apparently at present in that state) that a female child over the age of 10 years has sufficient intelligence and discretion to consent to the surrender of her virtue and the defilement of her person. Every child under 14, the court declares, is presumed by the law to be incapax doli (that is, mentally incapable of entertaining a criminal intent), because presumed not to have developed sufficient intelligence and moral perception to distinguish between right and wrong and to comprehend the consequences of his act. And hence no child under 14 can be punished for any crime except on proof of exceptional intelligence and maturity. And yet, while this is true, and while it is further true that a female child less than 10 years old, by so much as a day, is conclusively presumed incapable of consenting to sexual commerce, a female child over 10, by so much as a day, is conclusively presumed capable of consenting to the sacrifice of her virginity, her social undoing and her moral ruin. This, the court supposes, by analogy, is because she is presumed to have sufficient intelligence and moral discrimination to distinguish between right and wrong, and to comprehend the ruinous consequences of the act. This presumption is inconsistent with the presumption of incapacity to commit crime, and in irreconcilable conflict with the truth, and is an insult to our intelligence. We all know that the overwhelming majority of the girls of this state under 14 years of age, in their ignorance and innocence, do not and can not have any adequate understanding of sexual commerce, nor any comprehension of the ruinous consequences of a lapse from virtue. The legal presumption which declares that every female over 10 years of age is fully capable of giving intelligent assent to her own ruin, and which, therefore, make her fair play for any lecherous scoundrel who can impose on her innocence and credulity, is a reproach to the law, a disgrace to a Christian state, and a blot on the civilization of the age. The girls of the state under 14 should be protected by a legal presumption that they are incapable of consenting to their own shame. This presumption might be made either prima facie or conclusive. If prima facie, it might be allowed to be rebutted on proof of exceptional intelligence and maturity. If conclusive, the penalty might, in the discretion of the trial court, be made either death, imprisonment for life, or imprisonment for a term. In this way, without injustice to any one, our daughters could be protected by the law until such time as they could reasonably be presumed to have sufficient discretion to protect themselves against the machinations of the seducer.

Physician Competent to Give Certain Opinion Evidence.—The Supreme Court of New Mexico says, in Miera vs. Territory, that opinion evidence is not, in its nature, so distinct from and inferior to what is usually termed direct evidence as it is, perhaps, commonly assumed to be. In the last analysis all testimony may fairly be termed opinion evidence, and the court may properly act on the familiar principle that the best evidence should be offered. Unquestionably, in many cases so-called opinion evidence would be more helpful than any direct testimony obtainable, and that for two reasons: First. It may be the testimony of one to whose sight, hearing or other senses has been presented that which can not be reproduced to the jury. It is said in opposition to the admission of such testimony that the facts should be stated to the jury, and the opinion formed by it. But not even the great masters of literature have been able to put in words precisely what they saw, still less what was apprehended by their other senses. In recognition of this truism courts have permitted witnesses to state their opinions with regard to sounds, their character, from what they proceed, and the direction from which they seem to come; as to resemblance of foot tracks; whether a person's conduct was insulting; and where noisome odors render a dwelling uncomfortable, etc. Second. The opinion may be that of a person qualified by study or experience, or both, to understand and explain the subject under consideration, commonly termed an "expert." The opinions of such witnesses are taken in all courts on a great variety of subjects, but not usually on the question whether death was self-inflicted. In State vs. Lee, 65 Conn. 265 (1894), however, and in Commonwealth vs. Leach, 156 Mass. 99, the testimony of a physician was admitted on that point; but in each of those instances the wound testified of was in the uterus, to procure abortion, and it might be said that if it had been an outward wound, open to common observation, the testimony would have beeen rejected. That objection, it seems to this court, goes to the weight, and not to the admissibility, of such testimony. Physicians have been allowed to testify that sexual intercourse was highly improbable, if not impossible, between a man and a woman in a buggy, which was described to the jury (People vs. Clark, 33 Mich. 1122); that such intercourse by force was impossible with a woman seated in a rocking chair, which was shown to the jury (State vs. Perry, 41 W. Va. 641); and that it was impossible in a winding stairway, which was described to the jury (McMurrin vs. Rigby, 80 Iowa, 322). Certainly it can not be claimed that wounds causing death are more a matter of common knowledge than the act to which the human race owes its continuance. In 41 W. Va. the admission of the testimony in question was put expressly, and in the other cases impliedly, on the ground that the witnesses "had made the human system, including its joints and organs, the subject of peculiar study, such as a jury would be unable to give in the short time allowed them in the examination of the evidence, and thus [could] assist them in arriving at a just conclusion." Precisely that kind of research would qualify one to determine better than an ordinary person could do whether a wound could have been self-inflicted. And this court holds that an experienced physician, who held an inquest on the body of the woman with whose murder the defendant was charged, was properly permitted to testify that, in his opinion, she could not have inflicted on herself the wound of which she died, and that she was sitting down when the shot was fired. To exclude such testimony, it says, is to hold that the opinion of a jury, based on evidence necessarily incomplete, is preferable to that of a man of learning and experience, who has seen and touched that of which he speaks. The value of the physician's opinion was for the jury to determine. If it preferred to form and adopt an opinion of its own on the other evidence given it was at liberty to do so.

Current Medical Literature

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

American Medicine, Philadelphia.

September 9.

1 *Cases Illustrating Some of the Difficulties in Abdominal Diagnosis. E. E. Montgomery, Philadelphia.
2 *Deformities of the Lower Extremity. G. G. Davis, Philadelphia.
3 Therapeutic Value of the Digestive Ferments. H. W. Bettmann, Cincinnati, Ohio.
4 *Repair of the Genital Tract Following Labor. F. C. Hammond, Philadelphia.
5 *Iron Precipitates in the Blood, Spleen and Red Marrow. E. T. Williams, Boston, Mass.
6 *Technic of Pelvic Examination and the Principles of Local Pelvic Medication. E. A. Schumann, Philadelphia.
7 *Advantages of Sanatorium Treatment of Tuberculosis. F. M. Pottenger, Los Angeles, Cal.

1. **Difficulties in Abdominal Diagnosis.**—Montgomery cites the history of six cases, illustrating some of the difficulties, which may be divided into those in which the solution has to do with the existence or non-existence of pregnancy; those in which ovarian tumors may be in question; those in which doubt occurs as to the presence of a myoma, and those in which there is uncertainty as to the existence of other growths.

2. **Deformities of the Lower Extremity.**—According to Davis, the main characteristic of these deformities is weakness. This may be either a weakness affecting the constitution and tissues of the body generally, or it may be a local weakness, or it may be both combined. He divides the cases into three classes: (1) Those due to rickets; (2) those due to paralyses, and (3) those due to deformities of the feet. In these three groups are included most of the deformties of the lower extremities, their diagnosis, prognosis and treatment being considered in detail.

4. **Repair of Genital Tract Following Labor.**—Hammond emphasizes the importance of a thorough examination by inspection, with a good light, of the genital tract as a routine measure on the termination of labor. Repair of lacerations should be done within twelve hours, if the condition of the patient permits. The technic of suturing the various lacerations is thoroughly detailed.

5. **Iron Precipitates in the Blood, Spleen and Marrow.**—Williams found iron precipitates in healthy spleens, in marrow and in healthy blood. He believes the gastric juices extract this iron from the food in the form of a chlorid, which combines with the peptones in the stomach to form a peptonoid. Thence it passes into the portal vessels and spreads through the system. A large amount of it is plainly deposited in the spleen and marrow, where it is intended to serve as pabulum for the young red blood corpuscles.

6. **Pelvic Examination and Medication.**—Schumann says that in all cases involving abdominal section or in which an accurate diagnosis is at all difficult two examinations should be made at least twenty-four hours apart. Inspection is an important and frequently neglected portion of the diagnostic technic and should not be omitted save in cases of extreme delicacy on the part of the patient. Rectal touch, particularly in the knee-chest position, is of great value in determining obscure affections of the pelvic organs. Local treatment, especially the use of the hot vaginal douche, is described at length. The douche should be given at least twice daily, morning and evening, and its administration should last perhaps a half-hour—certainly not less than fifteen minutes. The temperature of the water should be as high as may be comfortably borne by the patient. It may be increased from day to day to 100, 110, 115 and even 120 F. Its use should be continued for over a long period of time, months, and sometimes even years. Long-continued use is essential to the success of the procedure. Too long-continued use, however, of the douche in the normal vagina must never be practiced, since the washing out of the normal vagina of lactic acid bacteria, whose function is to render the vaginal secretion acid and an unfit culture medium for most pathogenic bacteria, renders the passage of such organisms to the higher pelvic organs comparatively easy.

7. **Advantages of Sanatorium Treatment of Tuberculosis.**—Pottenger believes that patients can be treated best in a sanatorium, because (1) they are under the immediate and constant guidance and control of the physician who can see that they do the things which are necessary to help bring about a cure, and prevent them from doing things which tend to lower vitality and retard progress; (2) they are furnished with apartments suitably lighted and ventilated, and with food adapted to their needs and properly prepared; (3) they can be given the advantages of all scientific measures which have proved of value in treatment. Good food, fresh air and careful guidance are the basis of treatment, but the tuberculous individual is not receiving the best that can be had until we give him the benefit of all scientific aids, and of these especially to be recommended are hydrotherapy, the chemic rays, culture products, and direct medication of the upper air tract.

Medical Record, New York.

September 9.

8 *Sciatica and Its Treatment. W. M. Leszynsky, New York.
9 *Scientific Classification of the Methods of Modifying Cow's Milk for Infant Feeding. G. R. Pisek, New York.
10 *Kerulg's Sign and Its Pathogenesis. G. B. Hassin, Chicago.
11 *Mechanics of Dorsal Pott's Disease. J. C. Schapps, Butte, Mont.
12 Ear Complications of Cerebrospinal Meningitis. C. J. Colles, New York.
13 Ectopic Gestation Complicated by Mental Disturbance. F. G. Hodgson, Atlanta, Ga.
14 Eye Injuries Due to Blows from the Corks of Ginger Ale Bottles. C. Graef, New York.

8. **Treatment of Sciatica.**—Leszynsky remarks that pain in the course of the sciatic nerve is common, but that genuine sciatic neuralgia is rare. Most of the cases are really perineuritis or interstitial neuritis, while others are symptomatic of interference with nutrition by some extrinsic lesion. The causes of sciatica are exposure to cold, overfatigue of the legs, and pressure on the nerve from habitual sitting in persons whose metabolic processes are impaired by rheumatism, gout, diabetes, or alcoholism, injuries from lifting heavy weights, horseback or bicycle riding, sewing-machine work, etc. Sciatic pain occurs in diseases of all neighboring organs that are associated with compression of the sciatic nerve or sacral plexus. Such are tumors and inflammation in the pelvis, or of the spinal meninges, vertebral caries, uterine disease, pregnancy, parturition, malignant disease of rectum, hemorrhoids, hardened feces, sarcoma of femur, etc. It may result from fracture or dislocation of the thigh. It is rare from lead, mercury, or syphilis. Anemia, chlorosis, and hysteria have little influence in producing it. It may develop suddenly from exposure, or slowly when symptomatic of other diseases. The diagnosis is based on pain or tenderness over the nerve trunk, which radiates to the foot or toes, and diminution or loss of the Achilles tendon reflex. When degenerative, it is accompanied by paralysis, atrophy, vasomotor disturbances, etc. In the treatment of sciatica the first thing is the diagnosis of the cause and its removal when possible. In acute cases heat by the hot wet pack, combined with rest and fixation, and hot saline enemata, relieve pain. The bowels should always be moved by enema, and calomel given to unload the bowel and eliminate poisons. Morphin or opium suppositories are always indicated to obtain sleep at night. Massage, if gentle, is useful. Linear cauterization is of value in relieving pain, as is the ice bag at times. The continuous galvanic current in either direction is useful at the end of one week. It is more useful in mild, subacute or chronic cases. Mild cases will yield to hot packs, massage, and rectal irrigation. In subacute or chronic cases a modified rest cure is essential. Drugs are useless. Daily massage and passive movements and systematic exercises are useful. Hydrotherapy, in form of local wet pack, Scotch douche, etc., is most valuable. Static or faradic electricity in the form of the brush is useful.

9. **Methods of Modifying Milk for Infant Feeding.**—Pisek classifies the principles involved in the methods of feeding now in vogue, so as to show the effect of the use of these methods. Infants develop new functions during the suckling period, and change in form and function until the weaning period, after which growth is principally in size. The teeth in the child are absent, and the stomach is not like that of the adult. The digestive tract is developing and changing in functions, yet the

milk remains practically the same in composition throughout lactation. Hence the stomach as it develops changes the milk so as to make it suitable for its altered form and function. The digestive secretions change the milk, producing curds, and so supplying the solid constituents that are necessary to accustom the stomach to digestion of solids. A large factor in feeding is the gradual changing of diet. The proteids of colostrum are soluble. This is gradually displaced by proteids in the form of casein combined with calcium, which forms curds. The first secretion of the stomach is rennet ferment, which produces paracasein, a compound unaffected by pepsin. A small amount of acid secreted will produce free paracasein curd, which is digestible by pepsin. This is denser than the curd produced by rennet. More acid causes the free paracasein to combine with the acid and form chlorid of paracasein, digestible by pepsin. Thus the stomach may produce three solid compounds with casein of milk, having different forms and digestive properties, depending on the strength of the secretions. The author divides the methods of infant feeding into seven groups. The first group contains all methods that affect the quantitative composition of milk—dilution, with fat and sugar addition and whey and cream mixtures. To insure proper growth and development the infant needs as much tissue and energy foods as are found in human milk. The energy foods in cow's milk are in the same quantities as in human milk, but the tissue foods are in larger amounts. To reduce the quantity of proteids the milk is diluted, and to bring the energy and fat foods up to normal, sugar and fat must be added, otherwise the proteid must supply the energy. If this is not done the infant fails to gain in weight and strength as it should. If the amount of sugar is too great, as in condensed milk, the excess of energy food is converted into fat, and the child gains in weight; it is supposed to be growing, but in reality it is being stunted and deprived of its natural rights, for proteids are needed for true growths, as well as mineral salts for the bones. Whey feeding, with casein removed, can be used only temporarily, as it supplies no solid matter for the stomach to act on. The second group includes methods that inhibit rennet action and formation of curds by the use of alkalies. The normal reaction of mother's milk has been found to be acid. The alkalies prevent the formation of curd in the presence of soluble lime salts. The alkali is always in excess of the amount necessary to neutralize acidity. The effect of any alkali prevents the rennet action and retards the action of the gastric secretions. Group three includes methods that retard rennet action and neutralize the acid of the gastric juice. Here basic compounds are formed with the casein, and all gastric digestion is prevented. Enough alkali is used to neutralize sour milk. Group four consists of methods which precipitate casein by acids. If sufficient acid is present it combines with the free casein and produces an insoluble precipitate like that of sour milk. Group five includes methods that profoundly alter the character of the milk—peptonizing, adding citrate and oxalate of ammonium, potassium, or sodium. They all prevent formation of rennet curds; the milk remains fluid. Group six contains the methods that indirectly alter milk—sterilizing, Pasteurizing, boiling, etc. They prevent the action of the rennet ferment, or render it slower than normal. In group seven are placed the methods that alter the curds mechanically, as by addition of cereal gruels. The gelatinized starch of the gruel makes the curd of the milk softer and more easily digested.

10. **Kernig's Sign and Its Pathogenesis.**—Hassin draws the following conclusions regarding its causation: In Kernig's sign we have, first of all, to do with stretching of the sciatic nerve. In the healthy state this stretching seems not to produce any pathologic conditions; but in disease when the nerve itself is affected or the nerve roots are affected—which undoubtedly takes place in acute meningitis—the stretched, affected roots react correspondingly; the posterior roots by producing pain, and the motor roots by producing contraction of the corresponding muscles, in the case of the sciatic nerve, the flexor muscles. The pain arising from the stretching of the posterior roots makes the patient instinctively keep away from further stretching of the posterior roots, as it happens, for instance, in dislocations when the muscles respond with strong contraction to any active or passive movements in the dislocated joints, so that this explanation may be held, at least, as the simplest one we have for the understanding of the mechanism of Kernig's sign. The occasional occurrence of the sign in typhoid fever may be explained by the fact that the meninges are frequently affected in typhoid fever, so that the sign is due, not to the fever, but to the concomitant meningitis. Regarding other published cases in which Kernig's sign was present in the apparent absence of meningitis, it is hard to prove that in those cases the meninges were not affected, so that, commonly, Kernig's sign may be considered as a standard sign of inflammatory meningeal lesions, and as being due to irritation of the spinal roots, produced by the stretching of the sciatic nerve.

11. **Mechanics in Dorsal Pott's Disease.**—Schapps analyzes the factors concerned in the production of the deformity in dorsal Pott's disease, and lays particular stress on the sternal protrusion. The weakest point is the front of the chest, and without the sternal protrusion the spinal deformity can not possibly take place. During the earlier stages of the disease, treatment in the recumbent position by some such apparatus as the Bradford frame is necessary, and the best and quickest results are obtained by treating the spine with the same gentleness as if it were fractured or otherwise acutely affected. The upright position should be deferred until the acute stage has passed, and the change should be a gradual and careful experiment. Schapps points out the mechanical defects of the ordinary apparatus designed for use by these patients, and says that it is a fallacy to suppose that the spine can be fixed by a brace attached to the back. Other fallacies are belief in the efficiency of spinal leverage and the means of securing vertical relief. He then describes and illustrates his own form of apparatus, which consists of a set of anterior pelvic and pectoral supports designed to be attached to a Taylor back brace in such a way as to support the chest as well as the back. This he considers superior to the plaster jacket or its modifications in regard to both efficiency and cleanliness, while it is also adaptable for use in cases of cervical or high dorsal disease.

Medical News, New York.

September 9.

15 *Recognition and Treatment of Pancreatic Inflammation. C. Beck, New York.
16 *Care of the Infant. H. P. DeForest, New York.
17 *Pneumococcus as a Factor in Hemoptysis. L. F. Flick, M. P. Ravenel, and J. W. Irwin, Philadelphia.
18 Dermoid Cysts of the Mediastinum. (Continued.) R. S. Morris, Ann Arbor, Mich.
19 The Country Practitioner. B. R. Riley, Coyville, Kans.

15. **Pancreatic Inflammation.**—Beck reviews the anatomy of the pancreas, especially its relation to the other abdominal organs, and discusses the clinical history of inflammations of that organ. He says that there is not one sign which is absolutely pathognomonic for pancreatitis. Only by carefully considering the history, the mode of the onset and the various combinations of the different symptoms can a diagnosis be made in most cases. He is convinced that pancreatitis is of much more frequent occurrence than is generally assumed, and that many cases, not only of the chronic, but also of the acute type, could be saved by surgical interference. The method of operating practiced by him is as follows: An incision is made alongside the outer margin of the rectus muscle. If a tumor was felt in the median line, the incision may reach from the xiphoid process to the umbilicus. If the rib arch proves to be in the way, Marwedel's method of resecting it may be advisable. The further procedures must bear an exploratory character. At first the ducts are inspected and palpated, in order to ascertain whether there be a calculus in the Wirsüngian or the common duct, or in the papilla of Vater. In this event, extraction of the calculus must be followed by duct drainage. If such steps are contemplated, large gauze pads must be ready to mop up the secretions as they escape. If there is a pancreatic exudation it must be discharged. During these manipulations the abdomen is frequently irrigated with hot sterile water. Beck regards the use of these simple means as very important in intra-abdominal operations, because they stop surface hemorrhage, permitting the surgeon to see more clearly. At the same time they remove exudations and blood clots in an easy, mechanical manner and eliminate, therefore,

a favorable soil for bacterial development. The repeated hot water irrigations, to a certain extent, also possess bactericidal properties. After the field is thoroughly cleaned, packing with 3 per cent. iodoform gauze is done. If the patient is in grave collapse, ether should not be given, and local anesthesia administered instead. In the subacute, or chronic form, the patient can always be given the benefit of a full general anesthesia.

16. **Care of Infant.**—Forest discusses the care of the mother during the pregnancy; the treatment of obstetric accidents; the hygiene of the infant and its nursing, and feeding during the first few days, until the milk comes.

17. **Pneumococcus as a Factor in Hemoptysis.**—Believing that the pneumococcus is the cause of hemorrhage in pulmonary tuberculosis, Flick, Ravenel and Irwin studied the ejected blood of a number of cases of hemorrhage. The pneumococcus was found present in all. In two of the cases there was a history of exposure to pneumonia in the one, and a history of exposure to another case of hemorrhage in the other. These two cases occurred in an institution in which four cases of hemorrhage occurred about the same time. The nurse who waited on the pneumonia patient came in contact with the other patients in the institution and waited on some of them.

St. Louis Medical Review.

September 2.

20 *Observations and Statistics with Regard to Cases of Variola Handled by the Health Department of St. Louis for the Years 1903 04. H. J. Scherck, St. Louis.
21 Fracture Deformities of the Lower Leg in Childhood. B. M. Ricketts, Cincinnati.

September 9.

22 Cardiac Neurosis: Necessity of Its Proper Diagnosis. G. L. Davidson, Wharton, Texas.
23 Progressive Intensification of Toxicity by Serial Injection of Septicemic Blood. W. H. Ford, St. Louis.

20. **Smallpox in St. Louis.**—During the fiscal year beginning April 1, 1903, and ending March 31, 1904, 228 cases of smallpox were sent to quarantine by the St. Louis Health Department. Of this number, 188 were white persons and 40 colored; 156 were males and 72 were females; 179 persons contracted the disease in the city, and 49 elsewhere; 199 persons had never been vaccinated, 8 had faint scars and 21 had poor marks. Only one patient died. During the year beginning April 1, 1904, and ending March 31, 1905, there were 854 cases, 110 of this number developing in quarantine. Six hundred and thirty-six were white persons; 108 colored; 433 males and 311 females; 715 persons contracted the disease in the city, and 25 elsewhere. As to the vaccinal status, 622 persons had never been vaccinated; 5 had good scars; 30 had very faint scars, and 83 had poor marks. Eighty-seven patients died, a mortality percentage of 11.3. The scars in those who had previously been vaccinated ranged in age from fifteen to fifty years. In regard to the contagiousness of the disease, Scherck states that he does not believe that it can be carried by means of a third party who simply comes in contact with the patient. It had been the experience of the St. Louis Health Department that not a single case can be attributed to contagion carried by physicians, fumigators or others. Furthermore, Scherck does not believe that even those susceptible to the disease can contract it by visiting the rooms recently emptied of smallpox cases. Actual contact with the disease is the only source of contagion. He has also observed that at a certain distance from the patient the poison seems to be so much attenuated that it does not convey contagion. He has noticed that, even in tenement districts, where families live very close to the patient, they have not contracted the disease, while momentary actual contact with the patient has produced the disease at the end of the proper incubation period. He urges that a determined effort should be made by all health officers throughout this country to the end that a compulsory vaccination law shall be enacted for the purpose of stamping out the disease.

New York Medical Journal.

September 9.

24 Surgery at the Dawn of the Nineteenth Century. N. Jacobson, Syracuse, N. Y.
25 Study of Masked Rheumatism. G. F. Souwers, Germantown, Pa.
26 Relative Frequency of a Protruding Lateral Sinus and Its Bearing on the Choice of Method for the Total Opening of the Middle Ear Cavities; with Demonstrations of Anatomic Specimens. E. Amberg, Detroit.
27 Six Lectures on Disease of the Blood. (Concluded.) J. M. Swan, Philadelphia.
28 Death Rate of Infants in the Summer Months. F. L. Wachenheim, New York.
29 Hot-Air Treatment of Acutely Inflamed Joints. W. R. Thomson, New York.
30 Prophylaxis in Tuberculosis. C. D. Alton, Hartford, Conn.

Lancet-Clinic, Cincinnati, Ohio.

September 9.

31 Education and the Hygiene of the Nervous System. (Concluded.) H. H. Hoppe, Cincinnati.
32 Masked Epilepsy. W. B. Fletcher, Indianapolis, Ind.
33 Operative Treatment of Laryngeal Tuberculosis. K. K. Wheelock, Ft. Wayne, Ind.
34 Treatment of Typhoid Fever with Castor Oil. C. C. Bass, Columbia, Miss.

American Journal of Obstetrics, New York.

September.

35 Toxemia of Pregnancy with Vomiting. E. McDonald, New York.
36 Treatment of Eclampsia. F. S. Newell, Boston, Mass.
37 *Eclampsia. C. A. Kirkley, Toledo, Ohio.
38 *Infantile Uterus and Its Treatment, with a New Operation for Anteflexion and Stenosis of the Internal Os. G. W. Barrett, Chicago.
39 *Mortality of Operations, Other than Strumectomy in Cases of Exophthalmic Goiter, with Special Reference to Gynecologic Operations. B. C. Hirst, Philadelphia.
40 *Mortality in Operations on Fibroid Tumors of the Uterus. J. M. Baldy, Philadelphia.
41 Vlardel's Treatise on Obstetrics. C. G. Cumston, Boston, Mass.
42 Postpartum Hemorrhage. J. T. Johnson, Washington, D. C.
43 *Alexander's Operation Through the Median Incision. K. F. M. Sandberg, Chicago.
43½ Sexual Frigidity in Women. G. Kolischer, Chicago.

37. See abstract in THE JOURNAL, June 17, 1905, page 1957.

38. **New Operation for Anteflexion.**—Barrett describes a new method of hysteroplasty which he has been using for the correction of anteflexion and constriction at the internal os, whether muscular, fibrous or membranous, as follows: The uterus is first dilated, and, if necessary, curetted, and should great elongation of the cervix exist, the cervix is amputated. The abdomen is then opened in the median line, and the uterus is brought up and held with a tenaculum placed just above the flexion at the internal os. A longitudinal incision is now made over the internal os, its length corresponding with the extent that the posterior wall needs shortening in order to straighten the uterus. The author's tenaculum forceps is used to change this longitudinal slit into a transverse one, broadening the cervix, the length of the slit, and shortening the posterior walls to the same extent. A median suture is placed while the forceps holds the incision transversely, and at the same time holds the uterus up. The forceps is then removed and one or two sutures are placed on each side of the median suture as needed. This procedure allows the cut ends of the circular fibers to be displaced to the side so that they are from 1.5 to 2 cm. apart, outside measurement. The circumference of the uterus is thus materially increased, and the constriction obliterated. The incision may be carried as deep into the cervical tissue as may be desired, into the canal, in fact, if a membranous stricture exists. The incision, however, grows shorter as it goes inward toward the canal. In the absence of other pelvic lesions, and in cases with a sufficiently roomy vagina, the vaginal route might be chosen.

39 and 40. **Id.**—See THE JOURNAL, June 17, 1905, p. 1956.

43. **Modified Alexander Operation.**—Sandberg has devised a modification of Alexander's operation, to be employed in cases of retrodisplacement of the uterus complicated with prolapse of more than a moderate degree. An incision is made in the median line, above the pubis, three or four inches long, down to the fascia. The skin and adipose tissue are then, by blunt instruments, dissected loose from the fascia on the one side until the external ring of the inguinal canal is exposed. The flap of skin and adipose tissue being held aside by two blunt retractors, the round ligament is picked up, freed in the usual way, and secured by a strip of gauze. The same procedure is repeated on the other side. The abdomen is now opened in the median line, and intra-abdominal work carried out in the usual way. In case of prolapse of more than a moderate degree, the sacrouterine ligaments are shortened. This accomplished, the fundus of the uterus is brought well forward, the round ligaments are pulled out through the inguinal canal, and

the effect on the uterus is ascertained. The deeper layers of the abdominal incision, peritoneum, muscle and fascia are now sutured, the peritoneum by interrupted or continuous catgut sutures, the fascia by interrupted figure-of-eight silk sutures. After this the round ligaments are pulled out to the extent indicated by the previous test and fastened by silk sutures, four on each side, of which three are carried through the aponeurosis of the external oblique muscle and the round ligament, the fourth one securing the ligament to the fascia over the pubic bone. The skin and adipose tissue are then united by means of sutures or adhesive plaster strips, but leaving the wound open enough for free drainage. The advantages of the method are: 1. There is only one incision. 2. That this is located where it gives the best access for examination of the pelvic organs and for work in the pelvic cavity. 3. One opens the abdomen for exploration with much less hesitancy when all work can be accomplished through the same incision, and many of the causes of failure of the Alexander operation may be ascertained and avoided by an exploratory opening of the abdomen. 4. The intra-abdominal work is limited as much as possible, stitching of the uterus or the round ligaments intra-abdominally being avoided. 5. It leaves no adhesions or bands between the abdominal wall and the uterus to interfere with the expansion of the bladder, or growth of the uterus in pregnancy, or to cause obstruction of the bowels. 6. The intra-abdominal relations are left in a condition most closely resembling the normal. 7. The part of the round ligaments retained is the thickest and strongest.

American Journal of Medical Sciences, Philadelphia.

September.

44 *Hematemesis from Gastric Ulcer. W. G. Thompson, New York.
45 Angioneurotic Edema. R. S. Morris, Ann Arbor, Mich.
46 *Examination of the Blood in Pulmonary Tuberculosis, with Special Reference to Prognosis. J. T. Ullom and F. A. Craig, Philadelphia.
47 *Rest in the Treatment of Laryngeal and Pulmonary Tuberculosis. W. P. Porcher, Charleston, S. C.
48 Relation Between Anthracosis and Pulmonary Tuberculosis. J. M. Wainwright, Scranton, Pa., and H. J. Nichols, Washington, D. C.
49 *Cyanosis Retinæ. W. C. Posey, Philadelphia.
50 Scarlatinal Otitis. F. B. Sprague, Providence, R. I.
51 *Causes of Gallstones. E. Beer, New York.
52 Contribution to the Doctrine of the Morphology of the Blood, Derived from Experimental Toluylendiamine Poisoning. E. Schwalbe, Heidelberg, and J. B. Solley, New York.
53 Xerostoma. L. S. Somers, Philadelphia.
54 *Clinical Investigations of the Digestion in the Insane. D. M. Cowie, Ann Arbor, Mich., and F. A. Inch, Kalamazoo, Mich.
55 Remarks on the Nature and Classification of Insanity. T. Diller, Pittsburg.
56 *Relation Between Climate and Health, with Special Reference to American Occupation of the Philippine Islands. W. S. Washburn, P. I.

44. **Hematemesis from Gastric Ulcer.**—Thompson studied about 200 cases of gastric ulcer with hematemesis with a view of formulating the indications for operation. The most interesting feature of these cases was the fact that considerably more than one-half of the patients were discharged as cured after serious hematemesis, which occurred either immediately before admission or during the patients' stay in the hospital, or both. The total deaths, numbering 41, present a ratio of one death to 4.8 cases. Included in the deaths which took place among the patients not operated on were several in which the ulcer was not the whole cause; thus 6 patients died from pneumonia, 1 with abscess of the pancreas, 1 with pyonephrosis, 1 with pyopneumothorax and 3 with a subphrenic abscess. One patient had a gastroureteral fistula. In 8 of the patients not operated on and in 3 of the 20 who were operated on, death occurred from the immediate effects of hemorrhage into the stomach, which at autopsy was found filled with blood. In one case, for example, the patient lost 80 ounces of blood, by actual measurement, during the three days that she was in the hospital prior to the operation. Twenty patients were transferred to the surgical division of the hospital for operation; of these 14 died and 6 were discharged as "cured." Of the 14 fatal cases 4 presented a septic peritonitis from perforation and were nearly moribund at the time of operation. Another, as stated above, was moribund from hemorrhage, a sixth was found to have a perforated duodenal (not gastric) ulcer, and a seventh proved fatal on the thirteenth day, a recent perforation having been disclosed at operation. None of these 7 cases, says Thompson, should, therefore, be considered as having any real bearing on the operative treatment of gastric ulcer, for they all presented a forlorn hope, 2 patients dying on the table and 4 within twenty-four hours. It appears that among the 20 patients operated on, the medical diagnosis was erroneous five times, there being 1 case of tuberculosis of the stomach, 1 of perforating duodenal ulcer, and 3 in which no ulcer was discoverable. From a further analysis of these 195 cases it appears that operative measures can rarely be relied on for the cure of active hematemesis, and that also in many cases operation was delayed until the conditions present were too serious to admit of recovery. When successful results are to be anticipated they are to be looked for in the category of cases with adhesions, cicatrices and stenosis chiefly, and in operations such as gastroenterostomy, performed between rather than during, attacks of hematemesis.

46. **Blood in Pulmonary Tuberculosis.**—Ullom and Craig examined the blood in 39 cases of pulmonary tuberculosis with the view of getting information with reference to the value of the blood findings in such cases from a prognostic standpoint. They found that in pulmonary tuberculosis, without cavity formation, a mild anemia, with a decrease in erythrocytes and a relatively greater decrease in hemoglobin, is constant. From the standpoint of prognosis, an increase of the erythrocytes, in cases without cavity formation, is of favorable significance. In advanced cases a decrease of the leucocytes is of unfavorable import. They received the impression that the actual increase of lymphocytes seems to correspond to the increase of resistance on the part of the organism to the tuberculous infection. The transitionals seem to follow the same rule as the lymphocytes in this regard. At the beginning of the investigation the eosinophiles seemed to increase with the patient's improvement, but further study did not support this view.

47. **Rest in Laryngeal and Pulmonary Tuberculosis.**—The great benefit derived from the non-use of the voice, says Porcher, is so striking that no one can fail to appreciate it who watches the progress of the case. It is not alone in cases of laryngeal tuberculosis that complete rest of the larynx and pharynx is indicated. In ordinary pulmonary cases efforts to phonate excite hypersecretion and contraction of the laryngeal muscles. Complete cessation of phonation, therefore, will lessen the amount of cough and consequent prostration, hyperpyrexia, etc. Rest, either partial or complete, should be paramount in all these cases.

49. **Cyanosis Retinae.**—Posey reviews the literature on this subject and cites a case seen by one of his assistants.

51. **Causes of Gallstones.**—The results of investigations made with the view of determining the causation of gallstones are detailed by Beer. He collected 12 cases at autopsy in which there had been common duct obstruction for more than four or five weeks and in which a more or less severe inflammation of the extrahepatic and intrahepatic ducts had developed. In 7 of these cases the common duct was obstructed by calculi, and in 5 by tumors of various kinds. In the first series of 7 cases, as a result of the conditions of the experiments, stones formed in the liver ducts. In the second series of 5 cases, though apparently the same conditions were present, no stones developed, though stagnation of bile and inflammation of the mucous membrane of the bile passages were present. Beer suggests that a faulty hepatic metabolism underlies the formation of gallstones. His investigations show that Naunyn's stagnation of bile, plus inflammation of the bile passage mucosa do not seem to be sufficient by themselves to lead to gallstone formation, even though the time allowed for the working of the causes be adequate. His first series of cases shows that these two factors lead to stone formation in patients who previously had gallstones.

54. **Digestion in the Insane.**—Cowie and Inch record the results of a series of investigations on the work of the digestive glands in the insane conducted at one of the Michigan asylums for the insane. Their conclusions are as follows: In states of mental depression (melancholia) hyperacidity is the rule, occurring in 71.4 per cent. of von Noorden's 14 cases, 81.8 per cent. of their 22 cases, or in 77.7 per cent. of all cases (36

in number). Males and females are equally affected. This hyperacidity is due to a true hyperchlorhydria. Hyper-total acidity also occurred in their cases, and in this respect they correspond exactly with those reported by von Noorden. The hyperchlorhydria is of moderate degree, is fairly constant, and is associated with increased power and rapid evacuation. The increased secretion is due to the neurosis or psychosis and not to proliferative changes in the glands, as is evidenced by the presence of increased secretion associated with degenerative changes in the glandular elements, and of the entire mucosa. The evacuation of the stomach is usually normal or somewhat hastened after the Ewald test breakfast, while after the large stimulus of the Riegel meal and the ordinary asylum meal it is more frequently hastened. In the cases showing hyperchlorhydria the peptic value is never below normal and is frequently increased. Many of the insane suffer from various forms of gastrointestinal disease. These conditions are very frequently overlooked, probably because complaints and delusions of the digestive tracts are so common in these patients. Experience and the results of this investigation prompt Cowie and Inch to urge the absolute necessity for systematic routine examination of all the secretions and functions of the body in these patients, including what is often a very difficult task, the examination of the stomach contents. The signs of disease in the insane are almost wholly objective, and here more than in normal mental states it is essential that every modern method of value should be exhausted in order to arrive at a complete diagnosis of the case. Cancer and ulcer of the stomach may thus often be recognized in its incipiency. Chronic gastritis in its several forms, as well as the painful neuroses, will also often be encountered. If proper treatment be instituted it is not at all improbable that the mental symptoms in these cases will proportionately decrease.

56. **Relation Between Climate and Health.**—Washburn discusses the relation between climatic conditions and health, with special reference to Americans in the Philippine Islands. He says that with respect to the principal climatologic factors, temperature, humidity and atmospheric movements, the climate of the Philippine archipelago is not extreme, as it is distinctly insular in character, the greater portion of the land area being not far distant from the ocean. There are other modifying influences which obtain in portions of the archipelago, such as general oceanic and local inter-island currents, prevailing winds, elevation, the state of cultivation and drainage of soil, and the presence of forests and other plant life. Excluding localities in the tropics characterized by excessive heat, high relative humidity or unhealthful soil conditions, acclimation or physiologic adaptation of the white man to tropical environment is possible. Failures of the white race to live in the tropics and to maintain health, excluding localities indicated in the second conclusion, appear to have been due principally to non-observance of the rules of personal, domestic and public hygiene. As a rule, Americans appear to become acclimated in the Philippines during the third year of residence. With sanitary surroundings, and by observing the rules of personal and domestic hygiene, residence of Americans in the Philippine Islands appears to be attended with as little danger of disease and death as residence in the United States under similar sanitary conditions.

Annals of Ophthalmology, St. Louis, Mo.

July.

57 *Corneal Cyst. M. Frank, Chicago.
58 Technic of Implanting Thiersch Epidermis Grafts in the Operation for Symblepharon. F. C. Hotz, Chicago.
59 Congenital Paralysis of the Abducens of One Eye with Convergent Squint of the Other. V. L. Raia, Providence, R. I.
60 Two Cases of Spasmus Nutans. M. Buchanan, Philadelphia.
61 Ptosis and Operation of Motais. H. D. Bruns, New Orleans.
62 Case of Keratitis Nodosa. O. Wilkinson, Washington, D. C.
63 Ablepharia Partialis of Upper Eyelids. L. W. Fox, Philadelphia.
64 Proof of the Existence of Amblyopia Ex Anopsia in Strabismus. W. B. Johnson, Paterson, N. J.
65 *Operation for Entropion and Trichiasis by a New Method. S. Lagleyze, Buenos Ayres.
66 Radium in Trachoma. J. C. Beck, Chicago.
67 Hysterical Blindness—Its Treatment. A. D. Williams, St. Louis.
68 Eye-Strain. E. H. Hazen, Des Moines, Iowa.
69 Etiology of Astigmatism. G. M. Gould, Philadelphia.
70 Intraocular Infection of Endogenous or Metastatic Origin. J. Terson, Toulouse.
71 Accident with Adrenalin. D. De Beck, Seattle, Wash.
72 Memorial Volume to Julius Hirschberg, on the Twenty fifth Anniversary of His Professorship in the University of Berlin, translated by C. Loeb, St. Louis.

57. **Corneal Cyst.**—Frank relates a case of corneal cyst in which there was no history of trauma or previous inflammation of the cornea. The patient had noticed the growth for fifteen years. It was situated at the apex of a pterygium, on the nasal side of the right cornea. The cyst measured 3 mm. in height, 4 mm. in width, by 5 mm. in length. It was opaque, whitish in color and firm to the touch. It contained about 2 mm. of a clear, almost colorless fluid, faintly alkaline in reaction. Microscopic examination of the cyst contents showed cellular débris and a few epithelial cells. The pterygium was torn loose from the cornea with a strabismus hook, destroying the anterior cyst wall at the same time. Forming the posterior surface of the cyst was a firm, thin scale of tissue, measuring 3 by 4 mm., which had probably separated from the cornea by pressure necrosis. This was dissected out and the wound in the conjunctiva was drawn together with two sutures and the corneal area corresponding to the cyst curetted. The wound healed promptly.

65. **New Operation for Entropion and Trichiasis.**—For the past ten years, Lagleyze has practiced exclusively in entropion, whether of the upper or lower lid, a method of his invention, which he has used in more than 300 cases without reproduction or injury to the normal aspect of the palpebral opening or to the lids. The operation does not require general anesthesia; local anesthesia is sufficient. He instills a few drops of cocain solution over the globe, and injects the same solution under the skin of the lid to be operated on; to the cocain solution he adds adrenalin chlorid. The necessary instruments are: a needle-holder, a bistoury, a pair of scissors to cut the threads of the sutures, which are to be of silk, and introduced by means of a number of curved needles about 3 cm. in length. For a complete entropion he employs six needles; for a partial entropion he uses a number in proportion to the extent of the entropion. After sterilizing the instruments, and making the region and field of operation aseptic, he proceeds to operate in the following manner: 1. The lid is everted in such a way that the limits of the superior border of the tarsal fibrocartilage are easily presented in the field of operation. 2. He inserts the needles into the conjunctiva, at the level of the tarsal superior border; slipping them between the fibrocartilage and the skin, so that they traverse the cellular tissue and orbicular muscle, and come out through the free palpebral border, at the level of the angle of implantation of the lashes. The needles should not be passed entirely through, but should be disposed so as to form a picture like that in Critchett's amputation. The needles should be spaced equidistant, it being advisable to commence by placing the first in the center, in order not to be preoccupied by maintaining the lid everted; then the others are inserted adjoining the center until the angles are reached. 3. He incises the conjunctiva and the tarsal cartilage parallel to the border of the lid, approximately 3 mm. from the free border, from one extreme to the other, if the entropion is complete. In partial entropion the incision must be made in proportion to the deformity, it being preferable, always, to extend the incision beyond the limits of the entropion. The incision is to be made with a bistoury, energetically, until obstructed by the needles, it being evident that a good result depends principally on a good division of the tarsus. 4. He passes all the needles and uses a traction on each of them, so that the deep loops of the thread are adapted to the surface of the conjunctiva. Immediately after the withdrawal of the needles, the lid returns to its former position. The ends of the threads which issue from the palpebral border must be separated so as to obtain five loops, if six needles have been employed. The ends corresponding to each loop should be strongly adjusted to a small roll of gauze. Making the knots in this manner the free border is not damaged, the sutures are not lost in the ulcerated tissues, and consequently there is no difficulty in withdrawing them. The advantage of this suture is due to the fact that the loops are successive without solution of continuity, thus obtaining a number of loops equal to the number of needles employed, less one. The sutures are to be withdrawn in seven or eight days. The palpebral border, from the point of incision, takes a contrary direction; it is

directed forward to such a point that if it is desired to exaggerate the effect, it may provoke a slight ectropion. The angle left by the incision forms a wedge which cicatrizes by second intention, filling the tissues with a new growth, and the length of the threads which maintain the corrective incurvation produces cicatricial lines which assist in the definite cure of the entropion.

Annals of Gynecology and Pediatry, Boston.

August.

73 General Considerations on Criminal Abortion. C. G. Cumston, Boston.

St. Louis Courier of Medicine.

August.

74 Baby Incubators on the "Pike." J. Zahorsky, St. Louis.
75 What Are the Interests, Duties, Rights and Privileges of the Medical Profession. F. J. Lutz, St. Louis.
76 What Experience Has Shown. G. Homan, St. Louis.
77 Outline History of Hospital Commission (1895-1899). A. Merrell, St. Louis.
78 System Under which Charity Hospitals Operate in Other Cities. L. S. Luton, St. Louis.

Southern Practitioner, Nashville, Tenn.

August.

79 Perinephritic Abscess. W. A. Bryan, Nashville.
80 Food Adulteration in Tennessee. L. Brown, Nashville.
81 Tuberculosis Cutis. J. M. King, Nashville.

Journal Missouri State Medical Association, St. Louis.

August.

82 Tuberculosis the Problem for the General Practitioner. W. Porter, St. Louis.
83 Recent Advantages in the Etiology and Treatment of Hayfever. H. W. Loeb, St. Louis.
84 Medical Education. C. M. Jackson, Columbia.
85 Case of Indigenous Tubercular Leprosy. J. Grindon, St. Louis.
86 Importance of Certain Points in the Diagnosis and Surgical Treatment of Appendicitis. J. V. Brown, St. Louis.
87 Method of Radical Relief of Cases of Deafness Long Abandoned as Hopeless; Illustrated by a Case of Nineteen Years Standing. R. Barclay, St. Louis.
88 Practical Suggestion Respecting the Removal of Foreign Bodies from the Larynx; Illustrated by a Case of Cockle-Burr on the Vocal Cords. R. Barclay, St. Louis.

New Orleans Medical and Surgical Journal.

August.

89 Barber Shop in Society. I. Dyer, New Orleans.
90 Cases of Raynaud's Disease and Ainhum. B. A. Colomb, Union, La.
91 Acute Pneumonia and Its Modern Treatment. L. G. LeBeuf, New Orleans.
92 Urine in Gastrointestinal Fermentation. A. C. Eustis, New Orleans.
93 Hemorrhage into Cecum from an Anomalous Appendicular Artery. F. W. Parham, New Orleans.

Albany Medical Annals.

August.

94 Committee on Classification of the Forms of Insanity. J. B. Chapin, H. B. Meredith, D. D. Richardson and G. I. McLeod.
95 Extra-Articular Tuberculosis of the Bones. C. G. Cumston, Boston.
96 Case of Chronic Eczema Involving the Entire Skin Surface. H. W. Carey, Troy, N. Y.

Journal Michigan State Medical Society, Detroit.

August.

97 Past and Present Status of the Medical Profession in Michigan. B. D. Harison, Sault Ste. Marie.
98 Surgery and Human Welfare. F. B. Walker, Detroit.
99 Is Gynecology to Remain a Separate Specialty? R. R. Smith, Grand Rapids.
100 Placenta Prævia. G. W. Nihart, Petoskey.
101 Difficulties in Diagnosis of Syphilis. J. F. Breakey, Ann Arbor.

Buffalo Medical Journal.

August.

102 Submucous Resection of Nasal Septum. J. J. Mooney, Buffalo.
102½ Prognosis of Asthma from a Digestive, Blood, Metabolic, Etiologic Standpoint. G. N. Jack, Buffalo.

Journal of the Association of Military Surgeons of the United States, Carlisle, Pa.

August.

103 Organization and Operation of the Medical Service at the Front in Modern Warfare. P. Imbriaco, Italy.
104 Sanitary Sergeant. O. H. Marion, Boston, Mass.
105 Case of Acute Tetanus Successfully Treated with Antitetanus Serum. H. W. Austin, Public Health and Marine-Hospital Service.
106 Surgical Experience After a Venezuelan Battle. J. C. Pryor, U. S. N.
107 Experiences of a National Guard Regiment in Connection with the Combined Regular Army and National Guard Maneuvers at Manassas. V. Kenerson, Buffalo, N. Y.
108 Medication on the Firing Line. W. F. Waugh, Chicago.
109 Surgeon of the National Guard. R. W. Montelius, Pennsylvania.
110 Use of Motor Wagons in the Medical Service at the Front. H. Mareschal, France.

Journal Mississippi State Medical Association, Vicksburg.

August.

111 Abscess of the Liver. E. M. Holder, Memphis, Tenn.
112 Phases of Medical Education. P. W. Rowland, Oxford.
113 Cholecystectomy. M. O. Shivers, Greenville.
114 What Are We to Expect from Serum Therapy? J. B. McElroy, Memphis, Tenn.

Denver Medical Times.

August.

115 Physics and Chemistry of Drug Action. E. C. Hill, Denver.
116 Normal Obstetrics, Physiology of the Puerperium. T. M. Burns, Denver.

Kentucky Medical Journal, Louisville.

August.

117 Hemophilia. I. Abell, Louisville.
118 The Doctor as Business Man, or the Business Side of a Doctor's Life. B. A. Caudle, Newstead, Ky.
119 Cyst of the Kidney—a Clinical Case. J. G. Sherrill, Louisville.
120 Extrauterine Pregnancy, Fatty Degeneration of Uterus, Sarcoma of Jaw—Pathologic Report. I. Abell, Louisville.
121 Cesarean Section. L. Frank, Louisville.
122 Pathologic Specimens—Dermoid Sarcoma—Extrauterine Gestation. L. Frank, Louisville.
123 Ophthalmia Neonatorum. H. Wood, Nashville, Tenn.
124 Food Poisoning. W. E. Shepherd, Taylorsville, Ky.
125 Typhoid Fever. J. W. Barnhill, Owensboro, Ky.

Virginia Medical Semi-monthly, Richmond.

August.

126 Treatment of Typhoid Fever. G. F. Jewett, Britton.
127 Stricture. R. C. Bryan, Richmond.
128 Diagnosis and Treatment of Stricture of the Urethra. L. T. Price, Richmond.
129 The Nose. C. M. Burton, Lexington, Va.
130 Matrimonial Aspect of Tuberculosis. A. B. Greiner, Rural Retreat, Va.
131 Surgery of Typhoid Perforation. E. A. Babler, St. Louis.

California Medical and Surgical Reporter, Los Angeles.

August.

132 Certain Types of Association and Habit Neuroses. J. T. Fisher, Los Angeles, Cal.
133 Cystic Degeneration of the Chorionic Villi (Vesicular Mole). T. P. Gerson and A. Fellows, Los Angeles.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal.

August 26.

1 Clinical and Bacteriologic Aspects of an Epidemic Simulating Influenza. R. A. Dunn and M. H. Gordon.
2 *Rats in Relation to Plague. B. Skinner.
3 Case of Emmetropia. A. Bronner.
4 *Intraocular Tuberculosis. W. H. Jessop.
5 *Id. K. Hess.
6 *Id. J. Hern.
7 Capsular Complications After Cataract Extraction. E. T. Collins.
8 Filtration of Fluid in the Eye When Under the Influence of Atropin or Eserin. E. E. Henderson.
9 *False Hay Fever. N. B. Harman.
10 Congenital Absence of the Dilator of the Pupil. K. Grossmann.
11 Conical Cornea and Hot-air Cautery. K. Grossmann.
12 Case of Amblyopia Apparently Toxic, Following Influenza. C. E. Shaw.
13 Effect of the Presence of Adenoids and Other Abnormalities in the Nasopharynx on Some Affections of the Eyes. J. Hern.
14 *Evolution in Blepharoplasty. A. H. Benson.
15 New Test for Visual Acuteness. G. A. Berry.

2. **Rats and Plague.**—Skinner discusses the question of whether rats are really the transmitters of plague to man or whether some other animal is responsible for the conveyance of disease. He inclines to the latter view.

4. **Intraocular Tuberculosis.**—Jessop has never seen a case he could prove to be primary intraocular tuberculosis, and doubts the existence of such a condition. He says that excision in intraorbital tuberculous conditions of the eye should seldom be done, unless there is much pain or the condition is telling on the patient's health, because the disease is not primary, and such a procedure would only remove one focus of the disease. He has never seen vitreous opacities in miliary tubercle of the choroid; neither were they present in two cases of chronic choroidal tubercle seen by him. He has had little experience with tuberculin, either as a diagnostic or as a therapeutic agent.

5. Id.—Hess employed old tuberculin in eighteen cases and Tr. in eight cases for diagnostic purposes. In thirteen cases there was a general reaction and in two cases a local reaction. Among the cases of iritis, a general reaction was present in more than 50 per cent. It was also present once in

a case of recent choroiditis, and once in a case of keratitis parenchymatosa. He has never observed any ill effect from tuberculin employed therapeutically. In one case of iritis there was an evident improvement after its use.

6. **Id.**—Hern has employed the new tuberculin for diagnostic purposes in many cases. In at least 85 per cent. of the cases there was a general reaction, and in about 50 per cent. there was some local reaction. He considers tuberculin useful as a diagnostic agent, but useless in treatment. He believes that in some cases it was harmful by setting up inflammatory changes in the eye.

9. **False Hay-Fever.**—Harman calls attention to an infection that simulates true hay-fever, but which is caused by eye-strain. Several such cases of astigmatism were relieved of the hay-fever symptoms by the wearing of proper glasses.

14. **Blepharoplasty.**—Benson describes what he terms the St. Mark's Hospital operation as follows: The patient being anesthetized, and a Snellen's or a Knapp's clamp having been applied to the lid, an incision is made with a Graefian knife along the whole length of the free border of the lid in such a way that all the cilia are contained in the anterior or skin flap, and no cilia in the posterior or conjunctival flap. The incision is made at least one-quarter of an inch in depth and rather obliquely forward, so that it allows the wound to gape freely. In case any errant hair bulbs have been left in the posterior segment, these can be easily dissected out. A second clamp is now applied to the patient's lip, and two parallel incisions are made with the Graefian knife through the mucous membrane. The length of these incisions is rather shorter than the incisions in the lid. The ends of these parallel incisions are now connected by short converging incisions so as to make the flap pointed at each end. This flap is then dissected up with a scissors and forceps. It is placed on the finger of the left hand, and all submucous fat and connective tissue is cut off with a scissors. A silk suture attached to a fine curved needle is then passed through one end of the flap and it is sutured into one end of the gaping incision made in the lid. The other end is similarly sutured, and each edge is fixed by two or more sutures to the corresponding edges of the lid incision. The clamp is then removed. Profuse bleeding follows for a few minutes, but soon stops. A dressing of boric ointment is applied to the eyelid and a simple form of a bandage is applied. The sutures may be removed after four or five days. A knot on the silk suture used to fix the extremities of the flap considerably aids its accurate adaptation. The operation is equally suitable to the upper and the lower lids and to all varieties of trichiasis, with or without entropion. The result of the operation is permanent.

The Lancet, London.

August 26.

16 Condition of the Blood Vessels During Shock. J. D. Malcolm.
17 Chemical Correlation of the Functions of the Body. E. H. Starling.
18 *Aciduria (Acetonuria) as the Cause of Deaths Following the Administration of Chloroform and Ether. L. G. Guthrie.
19 Contracted Muscles of Infantile Paralysis. F. R. Fisher.
20 Two Cases of Glanders. E. W. Goodall.
21 *Syphilis of the Third Generation. C. F. Marshall.
22 *Ruptured Interstitial Pregnancy; Abdominal Hysterectomy: Death. W. G. Nash.
23 Abdominal Surgery Based on Completed Records of 744 Cases E. S. Bishop.
24 *Case of Blackwater Fever Occurring in the North of Ireland and Treated with Quinin. R. Mowbray.
25 Technic of the Examination of Sputum for Tubercle Bacilli Fully Described. C. G. Higginson.

18. **Aciduria as Cause of Death After Anesthesia.**—Guthrie is of the opinion that the symptoms preceding death in these cases suggest acid intoxication by the poisonous precursors of acetone, and that these bodies take their origin in the disintegration of fat. In practically all cases of death following the administration of anesthetics, advanced fatty metamorphosis is found in most organs, notably in the liver. Ether is not capable of producing similar changes, yet they are found apparently to the same extent in deaths following ether as in deaths after chloroform. It therefore follows that such fatty metamorphosis must have existed prior to the anesthetization. The disintegration of fat into acid poisons may be due to the direct action of chloroform and ether in altering normal metabolism, or in some way they may favor the action of bacterial toxins present in the intestines in causing disintegration of fat. In any case, says Guthrie, the pre-existence of advanced fatty changes must be presumed in order to explain fatty acid intoxication, although it is probable that the fatty changes in the liver are physiologic and of the nature of infiltration rather than of degeneration. If this be so, it is possible to understand why anesthetics are dangerous at one time and not at another, the element of danger being the superabundance of fat existing in the liver at the time of operation. The storage of superfluous fat in the liver in some case may be due to the large quantities of cod-liver oil and fattening diet commonly supplied to delicate, crippled and rickety children in the hope of strengthening them, coupled with want of exercise. In accordance with the foregoing views, Guthrie advances the following conclusions for the prevention of untimely deaths of children after operations: 1. Before operation on even fat and apparently healthy children a careful inquiry should be made as to history of so-called "bilious attacks," which may in reality be those of "acidosis." 2. In all cases in which overfattening and want of exercise are suspected, operation should be delayed, if possible, until the patient has for some days been subjected to fat-free diet. Mild purgation during this period is probably indicated. The urine should be examined for diacetic acid and, if present, a course of alkalies, such as bicarbonate of sodium, should be prescribed. 3. It should be remembered that both starvation and fright give rise to acetonuria. The four hours' fast usually imposed on children before operation is too long, especially when one considers that it will necessarily continue not only during the operation, but for many subsequent hours. Nutrient enemata should be given, after clearing the lower bowel, two hours before an operation and immediately afterward. The effect of fright can not be altogether controlled, but may be combated by preventing starvation. 4. The treatment of symptoms of acid intoxication following operations should be by venesection, saline transfusion, and by clysters of solution of bicarbonate of sodium.

21. **Syphilis of Third Generation.**—Marshall cites a case of this kind. The grandmother of the patient had the scars of multiple gummata about both knees. The mother, at the age of 16, had a gumma of the popliteal space and extensive destruction of the palate leading to constriction of the nasopharynx. She married at the age of 19 years and had three children, but no miscarriages. The first child (the one under consideration), had a distinct saddle-nose deformity and frontal bosses, but no other dystrophic stigma of hereditary syphilis. The second child died at the age of 3 years from bronchitis; the third child is said to be healthy. The possible flaws in the evidence are: 1, Acquired syphilis in the mother; 2, reinfection of the hereditary syphilitic mother; 3, acquired syphilis in the father, and 4, the intervention of another syphilitic genitor. In the absence of obvious signs of hereditary syphilis in the mother, says Marshall, it is absolutely impossible to exclude acquired syphilis, but extensive or advanced tertiary syphilis at the age of 16 years is strongly in favor of the hereditary disease. Syphilis of the father can not be excluded, as he was not examined. In view of the fact, however, that all three generations were under observation for some years, Marshall is of the opinion that the case can be regarded as one of probable transmission of syphilis to the third generation. He concludes his paper as follows: 1. The degenerative or dystrophic effects of syphilis are transmissible to the third generation and possibly further, only to die out with eventual sterility. 2. Although difficult to prove, the transmission of the virulent hereditary syphilis to the next generation is scientifically possible; the question depending chiefly on the two factors of time and treatment. We know that the signs of late hereditary syphilis may be delayed till the procreative age; hence a hereditarily syphilitic genitor in a virulent state might transmit the disease in virulent form to the offspring. The reason why such cases are rare is the fact that a small proportion of patients marry while suffering from hereditary syphilis in a virulent form. At the time of marriage the disease is usually attenuated by time and also by treatment if this has been adequately administered. 3.

Reinfection of a hereditarily syphilitic genitor increases the virulence of the disease and its fatal effects on the offspring (binary syphilis of Tarnowsky). 4. The two chief obstacles to actual proof of transmission to the third generation are the possible reinfection of the second generation and the possible intervention of another syphilitic genitor.

22. **Ruptured Interstitial Pregnancy.**—Nash's case is an example of interstitial pregnancy, the rarest form of extrauterine gestation. During the fourth month (fifteenth week), rupture occurred, and in spite of operation the patient succumbed. Apparently the ovum became delayed in the left Fallopian tube where it passes through the uterine wall, and as it developed caused hypertrophy of the uterine tissues above the entrance of the tube. The uterine tissue was thinnest on the abdominal aspect of the gestation sac, so that when rupture took place it occurred into the peritoneal cavity. There was no separation of the uterine decidua, which accounted for the absence of vaginal hemorrhage or any other sign suggestive of an ordinary miscarriage.

24. **Quinin in Blackwater Fever.**—Mowbray reports a case of blackwater fever occurring in the northern part of Ireland, the patient having been infected a year or more previously in Africa. Quinin was given hypodermically in an initial dose of 18 grains, followed by 10 grains three times daily for five days, and then twice daily for two days more. The patient improved rapidly, but on the discontinuance of the remedy suffered an alarming relapse. A renewal of the quinin again brought about abatement to the symptoms, and the patient recovered.

Bulletin de l'Académie de Médecine, Paris.

Last indexed page 426.

26 (Year LXIX, No. 27.) *La marche du choléra en 1904 et sa menace d'invasion européenne. A. Chantemesse.
27 *L'hérédité des stigmates de dégenerescence et les familles souveraines (and reigning families). V. Galippe.
28 (No. 28.) *Observation de fibrolipome tuberculeux du genou (of knee). Couteaud and P. Reynier.
29 *Influence de certaines maladies intercurrentes sur la marche des palatoplasties. Ehrmann.
30 *Anesthésie complète produite chez les animaux par la voie sous-cutanée et par la voie stomacale. N. Gréhant.
31 (No. 29.) *Du prognathisme inférieur. V. Galippe
32 *De l'examen clinique des échanges respiratoires. A. Robin and M. Binet.
33 Action des ferments métalliques sur les éléments figurés du sang (of blood). A. Robin and P. E. Weil.
34 Id. sur la production de l'azote total de l'urée et de l'acide urique. Acide urique et leucolyse. Id.
35 (No. 30.) Causes de la faible mortalité infantile dans la ville industrielle de Creusot, France. Variot and Pinard.
36 *Pylorectomie avec gastrectomie plus ou moins étendue dans le cancer de l'estomac. A. Poncet and X. Delore.
37 *L'albuminurie dans ses rapports avec le diabète: ses conditions pathogéniques et ses formes diverses (diabète albumineux avec ou sans glycosurie). Lancereaux.
38 Influence du sel marin sur l'évolution des oeufs et larves d'Ankylostome dans les galéries de mines de houille (salt in fight against ankylostoma in mines). Calmette.

26. **Onward March of Cholera in 1904.**—This article was summarized in the news columns on page 336.

27. **Hereditary Transmission of Stigmata of Degeneration in Royal Families.**—Galippe remarks that a scientist who should forcibly apply the rules of puericulture to the production of teratologic monstrosities would be blamed, but that which is denied to the experimenter has been realized in certain reigning families of Europe. Instead of sexual selection, marriage has been regulated by pride of caste or political necessities, and the resulting intermarriages have perpetuated certain stigmata which can be readily traced through generations by portraits and historical records. In the Hapsburg family of Austria, for instance, the inferior prognathism and exaggerated development of the lower lip can be traced in the portraits through generations. When an anomaly of this kind occurs it is generally accompanied by other anomalies, obvious or internal. In the Hapsburg family the portraits from the middle of the fifteenth century to our day show a lateral flattening of the skull, causing the forehead to be unusually high, the eyes more or less protruding and the lower jaw and nose varying from normal. Even when the female members of the family did not present these stigmata they conferred them on their offspring. Napoleon's son by the Austrian princess had all the characteristics of the Hapsburgs, not of Napoleon. The claim of Naundorff to be the missing son of Louis XVI and Marie Antoinette was disproved by the absence of the Hapsburg stigmata which he would certainly have inherited, as both father and mother were of the Hapsburg stock. Galippe regards inferior prognathism, that is, the lack of correspondence between the upper and lower jaw and the protrusion of the latter, as a sign of marked degeneracy. It has been developed in the bulldog, and this breed of animals is developing other stigmata of degeneracy. In animals it is usually accompanied by a twisting and shortening of the legs, as in the crocodile. In man it is frequently accompanied by many of the signs of acromegaly. He gives a number of illustrations of members of the Hapsburg family, all showing the projecting lower jaw and long, narrow face, the frequent coincidence of adenoid vegetations being an added anomaly. This adenoid type is reproduced again and again in the reigning families so that many of the portraits are actually superposable. Acromegaly is at the top of the scale in which inferior prognathism is at the bottom, but the similarity between them in many respects suggests new fields for research in regard to the transmission of stigmata of degeneracy.

28. **Tuberculous Fibrolipoma of the Knee.**—Couteaud's patient recovered normal use of the joint after extirpation of the growth, which weighed 14 gm. Its tuberculous nature was demonstrated by the microscope and by inoculation of guinea-pigs.

29. **Influence of Intercurrent Diseases on Course of Palate Operations.**—Ehrmann reports three cases in which intercurrent scarlet fever in two and diphtheria in the third did not interfere with the success of the suture. Others have reported serious disturbances from an intercurrent affection. In his patients the first symptoms did not appear until three days or more after the operation and the suture escaped infection in all. He ascribes this fine result partially to his technic of operating in two sittings. His experience now comprises 65 cases in which he operated in this way. By reducing hemorrhage and shock, the child's receptivity is diminished and it is able to resist bacterial invasion better.

30. **Complete Anesthesia by the Subcutaneous and Stomach Routes.**—Gréhant injected 1 cg. of morphin per kilogram in a dog weighing about fifteen pounds, and in half an hour he poured into its stomach 350 c.c. of 10 per cent. alcohol containing 1.75 c.c. of chloroform. The resulting anesthesia in fifteen minutes was more complete and the dog was more tranquil than he has ever observed in all his experience with experimental anesthesia. In further tests with the same technic on a larger dog he noticed that the rectal temperature dropped several degrees and that the amount of carbonic acid gas exhaled by the lungs was much less than before, which explains the lowering of the temperature. Chloroform dissolves readily in 10 per cent. alcohol; a liter takes up 5 c.c. of chloroform, and this is the solution which he uses. He recommends this technic for man in case of extensive burns and crushing accidents. By injecting a small amount of morphin and giving a little chloroform in diluted alcohol it may prove possible to arrest all the pain without injury to the patient.

31.—See 27 above.

32. **Clinical Examination of Respiratory Interchanges.**—Hitherto investigation of the respiratory interchanges has been confined to the laboratory, but Robin has now invented an apparatus which allows it at the bedside. He gives a number of illustrations of the various parts of the apparatus. It registers the number of inspirations per minute, the volume of maximum expiration or the vital capacity, the pulmonary ventilation or volume of air expired per minute, the amount of carbonic acid and of the various gases produced, combined or absorbed, and the relations between these various factors of the respiratory functions. He has been conducting research with this apparatus on patients with typhoid fever, pleurisy, ascites, diabetes, osteomalacia, dyspepsia, cancer, hemorrhage, tuberculosis and the rheumatic diathesis. Study of the respiratory interchanges further throws light on the effects of drugs and of hydrotherapy and climatotherapy. In typhoid fever the respiratory interchanges are in inverse proportion to the severity of the disease. These findings justify the use of drugs which increase the consumption of oxygen and favor oxidations, and they contraindicate drugs with opposite effects.

In cases of ascites the respiratory changes are increased, paralleling the amount of ascites. The liver and the lungs have a common function, the elimination of carbon. When one becomes unequal to the task the other vicariously takes it up. After puncture, which relieves the ascites and hence the liver, the latter organ is able to reassume some of this task, and the interchanges in the lungs subside to a lower figure. This conjugate vicarious action of liver and lungs suggests, he thinks, that it might be possible to stimulate the liver functions to increased vicarious action when the lungs are unable to eliminate all the carbon necessary, or *vice versa* to stimulate the lungs to vicarious action when the liver is proving insufficient. Another important point in this connection is that the respiratory chemistry may serve to determine the best moment for tapping ascites. In diabetes the respiratory changes are more intense than in normal conditions. Consequently it can not be considered a disease due to retarded nutrition, but rather the reverse. It requires sedative medication and not measures to stimulate the various chemical activities of the organism. Sedative treatment reduces the respiratory changes as well as the glycosuria. This increased intensity of the respiratory interchanges explains why diabetics are peculiarly exposed to tuberculosis as it prepares the soil for the latter disease. If the respiratory changes remain high in a diabetic, even if the sugar has vanished from the urine, he is not cured and is always in danger of recurrence of the glycosuria. When the respiratory changes drop, especially when not accompanied by a corresponding drop in the sugar in the urine, coma is imminent and measures should be instituted to restore the respiratory functions nearer to normal. Hemorrhage has the effect of increasing the respiratory changes, showing that abstraction of a moderate amount of blood promotes general oxidation. Venesection is, therefore, indicated in affections with retarded nutrition from insufficiency of the nutritive processes, and also in autointoxications and in certain infectious diseases, like pneumonia, when the microbian poisons or those elaborated by the organism in its struggle against the infectious agent or poison, are causing serious damage. Withdrawal of blood accelerates the oxidations and thus aids in neutralizing these poisons, transforming them into soluble non-toxic products, easily eliminated. He has found that the respiratory changes are notably increased in 92 per cent. of all cases of tuberculosis, and during all stages of the disease. This increase in the respiratory changes is one of the manifestations of the "tuberculisable soil," as he calls it. The exaggerated aptitude to consume too much oxygen and to elaborate too much carbonic acid, that is, to consume itself, is the characteristic of the organism predisposed to consumption. The pretuberculous condition is one of exaggerated vitality, not, as generally supposed, one of depressed vitality. This view upsets all our preconceived notions in regard to prevention and treatment of tuberculosis. Instead of tonics we need measures to restrain the organism from burning itself up, and study of the respiratory interchanges reveals the measures suitable for this purpose and the exact doses that produce the finest results. The predisposed should be sorted out and treated the same as we vaccinate, by modifying the vital conditions of the soil. This respiratory syndrome is trasmitted to 60 per cent. of the descendants of tuberculous parents. In the rheumatic diathesis, the respiratory changes are diminished and the type is the reverse of that observed in tuberculosis. It is transmitted to 72 per cent. of the descendants as a rule. Oxygen supplied to the organism in excess does not materially modify the respiratory changes; they seem to depend more on the aptitude of the tissues to fix the oxygen than on the amount supplied.

36. **Pylorectomy for Cancer.**—Poncet has performed pylorectomy with more or less extensive excision of the stomach in 12 cases of cancer and 8 of the patients recovered. The cachexia or extension of the lesion or imperfect technic explain the fatalities. The remote conditions are eminently satisfactory in the patients cured, and justify his advocacy of immediate exploratory laparotomy on suspicion of cancer of the stomach, with more or less extensive gastrectomy as found necessary. Gastrectomy, he states, is not a serious operation when the lesion is in an early stage. The prospects were far from favorable in some of his cases.

37. **Connection Between Albuminuria and Diabetes.**—Lancereaux has observed albuminuria frequently in his cases of gouty, herpetic diabetes, while it was never noted in his 40 cases of pancreatic diabetes. The glycosuria alone does not entail albuminuria. When the latter occurs it may be connected with arteriosclerosis with consequent lesions of kidneys and heart, or it may be of epithelial origin due to some intercurrent affection, tuberculosis in particular. There is a third form, in which the albuminuria alternates with the glycosuria, and like the latter, is subordinate to some nervous disorder. He gives examples of each form, and adds that the physician should examine the condition of the kidneys and nervous system in such a patient, rather than determine the exact proportion of albumin. This will give him a clue both for treatment and for prognosis. There are three groups of circumstances in which this decision is of great value: When parents bring their sons to the consultant with the statement that their physician has told them that the lads are albuminuric and must be put on a milk diet, and that they must stop their college work. Study of the albuminuria and its accompaniments reveal that it is not due to a kidney lesion, and consequently that these precautions are unnecessary. Time shows that the lads develop spontaneously into good health and their albuminuria vanishes. In other cases life insurance is refused to men apparently in good health, under pretext of albuminuria. The kidneys are sound and the insurance company may be prevailed on to reconsider its objections.

Berliner klinische Wochenschrift.

39 (XLII, No. 29, July 17). *Ueber die baktericide eigenschaft des Typhusserums. J. v. Elischer und J. Kentzler.
40 Buttermilk Conserve.—Ueber Erfahrungen mit einer neuen Buttermilch-Konserve. W. Kassel.
41 *Pathogenese, Symptomatologie und Diagnose der Mündungs-Anomalien einfacher und überzähliger Ureteren beim Weibe. L. Thumin.
42 *Einige neuere diagnostische Forschungsergebnisse auf dem Gebiete der Lungentuberkulose (progress in diagnosis). De la Camp.
43 (No. 30.) *Affections Followed by Cancer.—Ueber Krankheiten, die dem Krebs vorangehen. E. v. Bergmann.
44 Die volare Luxation des Os lunatum carpi und ihre Behandlung. Hildebrandt.
45 *Zur Behandlung der freien puerperalen Peritonitis mit Laparotomie und Drainage. Kownatzki.
46 *Die Wirkung des Lecithins auf die Leukocyten. L. Detre and J. Sellei.
47 Aetiologie und spezifische Therapie des Heufiebers (hay fever). Dunbar.
48 *Laryngeal Tuberculosis as Indication for Artificial Delivery. —Ist die Kehlkopftuberkulose als eine Indikation zur künstlichen Unterbrechung der Schwangerschaft anzusehen? A. Kuttner.
49 *Ueber die Blutserumreaktion der Carcinomatösen. G. Kelling. Id. E. Fuld.
50 Cause and Treatment of Soft Chancre and its Consequences. —Ursache und Behandlung des weichen Schankers und seiner Folgen. E. Hoffmann.

39. **Bactericidal Properties of Typhoid Immune Serum.**—The various experiences reported elucidate some of the problems and antagonistic findings of others in the line of bacteriolysis, immunization, etc.

41. **Pathogenesis, Symptomatology and Diagnosis of Deformities in the Ureters in Women.**—Thumin's long article is based on the literature and on experience, especially on a case personally observed in which a supernumerary ureter presented a large cystic enlargement. The supernumerary ureter was located behind the peritoneum, and terminated in a cul-de-sac in the connective tissue. The symptoms of trouble in a ureter were puzzling, as both of the normal ureters could be seen functioning perfectly. Removal of the tumor restored condition to normal in every respect. The symptoms of ureter anomalies are generally disturbances in urination, especially incontinence while the bladder is continent. This occurs only when a persisting Gartner's duct opens into the roof of the vagina. The differentiation is extremely difficult when the ureter terminates in a blind sac. In the case described the nature of the cyst was revealed only by microscopic examination of the walls. The character of the superficial epithelium of the mucous membrane lining the cyst testified to its connection with the urinary apparatus.

42. **Recent Progress in Diagnosis of Tuberculosis.**—De la Camp discusses the value of the more recent diagnostic points in tuberculosis, saying that, on the whole, the old, classical

diagnostic measures are still superior to anything offered in recent years. His experience has been that bacilli can not be detected in even a third of all cases with expectoration. Abnormal auscultation findings are generally associated with abnormal percussion findings. Signs of irritation of the sympathetic, such as differences in the pupils, are important, as also suspicious Roentgen findings, especially in respect to tumefied glands in the mediastinum. About a third of all cases of localized apical tuberculosis present Williams' sign, that is, reduced movability of the affected half of the diaphragm. The anamnesis is of the greatest diagnostic importance, particularly a history of disturbances in the nervous system. The temperature may reveal its pathologic character only when examined directly after physical exercise.

43. **Affections That Precede Carcinoma.**—Bergmann calls attention to the frequency of certain affections in the preceding history of cancer subjects. Among them he cites severe congenital phimosis as a frequent antecedent of large carcinoma of the penis, also large scars resulting from burns. He has personally observed a striking case of this latter combination. A child of 4 fell into an open fire and was burned so that the resulting cicatricial contraction drew the skin of the axilla down to the hip. At the age of 40 a carcinoma developed on the cicatricial tissue, forming the largest cancer which he has ever had occasion to see. He has found a history of Paget's disease of the nipple in only 7 or 8 cases among his 1,000 operative cases of mammary cancer. The carcinoma develops directly from the eczematous alterations in this affection, as also in the acne of workers in paraffin. The latter exhibit usually multiple primary carcinomata. Psoriasis of the tongue and mouth may also be the precursor of a carcinoma. He does not credit a syphilitic etiology to this affection, as the lesion is not at all like those of the tertiary type of syphilis. In a case demonstrated he removed a carcinoma located in the middle of the patches and there has been no recurrence to date after two and a quarter years. He has also observed carcinoma developing on a lupus cicatrix and also from a fibroid lupus lesion. Lesser has reported cases of carcinoma in children of from 12 to 15 years which developed on the basis of xeroderma pigmentosum and was rapidly fatal. Bergmann denies the existence of primary carcinoma on the extremities without a preceding cutaneous lesion, scar, fistula opening, ulcer, eczema, wart or mole. A pigmented nevus leads more often to the production of a melanotic sarcoma than of a carcinoma. The smooth, small, multiple pigmented nevi contain nerve terminals from which minute fibromata are liable to develop, leading possibly to elephantiasis neuromatosa. The warty, dark-colored nevi are liable to be the seat of melanotic carcinoma, as in a case he reports. A small, dark-colored, hairy, raised nevus on the head showed little change for thirty-seven years after birth. Then the nevus began to grow, a bunch developed behind the ear and the enlarged glands of the region can be seen like a string of beads under the skin down to the back of the neck.

45. **Laparotomy and Drainage for Puerperal Peritonitis.**—Kownatzki states that 9 cases of non-encapsulated puerperal peritonitis have been treated at Bumm's clinic at Berlin. Two of the patients were moribund when seen, 2 others were operated on, but succumbed later. In one of the fatal cases pus had already found its way into the pleural cavity. In the other the affection proved to be a number of imperfectly encapsulated single abscesses which it would have been impossible to drain effectually and the development of which had evidently been favored by the opium previously given. It is possible that both these patients might have been saved if operated on sooner. All the other patients were cured by laparotomy and drainage with counter openings. He gives the details of these cases. In 2 there was septic infection; streptococci were numerous in the peritoneal exudate. He knows of no other instance on record of the cure of similar puerperal streptococcus, non-encapsulated peritonitis. The abscess contents were putrid in the 3 other cases. The peritonitis developed very slowly in all, the clinical picture not becoming complete until the seventh to the tenth day after delivery. The general health also was only very gradually impaired and the abdomen was only slightly sensitive to pressure. The difficulty of diagnosing the condition is so great in a woman convalescing from childbirth, that exploratory puncture is justifiable and urgent in dubious cases. The abdomen can be punctured with a small Pravaz needle without fear. Certainty was attained by this means alone in three of his cases. In another a small exploratory incision at the most suspicious point cleared up the diagnosis. A thorough operation is inadvisable, and the main idea is merely to secure the best possible conditions for rubber tube drainage. The incision was made in the inguinal region at the point where inflammatory processes originating in the uterus usually first reach the abdominal wall. The counter-incision was made at the lowest part of the lumbar region, where it merges into the back. There was no swabbing or rinsing, but the parts were thoroughly drained, secretions draining away for several days, as the symptoms subsided.

46. **A New Action of the Cell Nucleus-Phagokaryosis.**—Detre and Sellei found that it is possible to protect animals effectually against sublimate injections by mere subcutaneous injection of an aqueous or serous emulsion of lecithin. In ordinary phagocytosis the cell nucleus takes no part in the process, but with this emulsion of lecithin the nucleus incorporates the grains of the lecithin. It is evidently an active, independent process on the part of the nucleus which seems to have an affinity for the lecithin grains and to absorb them with avidity. They propose the term phagokaryosis for this action on the part of the cell nuclei.

48. **Laryngeal Tuberculosis and Pregnancy.**—Kuttner discusses the question as to interruption of a pregnancy in case of laryngeal tuberculosis. His conclusions are the result of ripe deliberation and council with lawyers as well as with physicians. He first reiterates the statement that diffuse laryngeal tuberculosis during pregnancy has an extremely unfavorable prognosis. The death rate of children whose mothers suffered from laryngeal tuberculosis during the pregnancy is exceptionally high. These facts theoretically justify artificial interruption of the pregnancy, but in practice the measure is permissible only when the conditions indicate that it is the only chance to save the life of the mother and offers some probability of success. Experiences to date have demonstrated that premature delivery in the last months of the pregnancy has little prospect of a favorable outcome. In this stage tracheotomy might still offer some chances.

49. **Blood Serum Reaction of Cancer Subjects.**—Kelling found in certain cases of carcinoma some special precipitins in the serum which displayed characteristic relations to a foreign albumin. He was unable to detect this reaction in case of other affections, and proclaims that its occurrence under reliable technic is a sure sign of some hidden carcinoma, but the absence of the reaction is no evidence that cancer does not exist somewhere. Fuld criticizes his assertions, and states that his control experiments were always negative and that Kelling's communication is not scientifically exact or complete.

Deutsche medicinische Wochenschrift, Berlin and Leipsic.

51 (XXXI, No. 30, July 27.) Die orthopädische Behandlung der Lahmungen (paralyses). A. Hoffa.
52 *Experimentelle Beiträge zur Frage der Desinfektion der Haut (of skin). K. Vogel.
53 *Ueber posttraumatische Psychosen. L. W. Weber.
54 *Ein Behelf für die Pneumatotherapie der Herzkrankheiten (air treatment of heart affections). M. Herz.
55 Ueber Radioaktivierung und ein neues Radiumpräparat (Radiophor). Axmann.
56 *Ueber den heutigen Stand der Schiffssanatorienfrage (floating sanatoria). H. Leyden.
57 (No. 31.) *Report on Epidemic Cerebrospinal Meningitis.—Berichte über die in der Hygienischen Station zu Beuthen O. S. vorgenommenen bakteriologischen Untersuchungen bei epidemischer Genickstarre. v. Lingelsheim.
58 Ueber den Paget-Krebs (cancer). H. Ribbert.
59 *Grooves, Clubfoot and Paralysis from Amniotic Constriction.—Ueber amniotische Furchen und Klumpfuss nebst Bemerkungen über Schädigungen peripherer Nerven durch intrauterin entstandene Schnurfurchen. Joachimsthal and Cassirer.
60 *Determination of Sensibility of Muscles and Joints.—Zur Methodik der Muskel- und Gelenksensibilitätsbestimmung. H. Curschmann.
61 *Bovine Tuberculin.—Ein neues immunisierendes Heilverfahren der Lungenschwindsucht mit Perlsuchttuberculin. C. Spengler (Davos).
62 *Zur Diagnose der Influenza und zur Pathogenese ihrer Symptome. A. Köppen.
63 *Ueber die allgemeine Enge des Aortasystems (general narrowing of aorta). F. Apelt.

52. **Disinfection of the Skin.**—Vogel has been using the apparatus for applying superheated air in his experiments in regard to disinfection of the hands. The impetus to the circulation and perspiration in the hot-air bath is a good means to test the depth of the action of the disinfectants. He held his disinfected hand in the hot-air box, and from the number of germs found on it afterward drew conclusions as to the more or less completeness of the preceding disinfection. The germs thus brought to the surface could easily be destroyed. He is convinced that the germs found after this exposure proceed less from the crevices in the skin than from the gland passages. If the surgeon's hand becomes soiled the best way to free it from germs is to hold it in the hot-air box, and thus sweat out all impurities from it. This method of disinfection might also be applied to parts of the body covered with hair, supplementing the physical, mechanical and chemical procedures by this physiologic enhancing of the natural activity of the skin. He suggests that stitch hole suppurations might be avoided by always taking the stitch from within outward, never from without inward, and by always taking a fresh needle for every stitch. His tests of various technics for disinfection showed that the Fürbringer hot water-alcohol-sublimate method is superior to Mikulicz' tincture of soap method in regard to the sterility of the hands, but the latter technic has so many advantages and the results are so good that he still clings to it in preference to the other.

53. **Post-traumatic Psychoses.**—Weber gives a number of examples from his own experience, remarking that there is no uniform clinical picture for the traumatic psychoses. A connection may be assumed between the accident and the psychosis when the character changes immediately or soon after the accident, becoming irritable or slightly depressed. Also when an organic brain affection, especially a fulminating paralysis, sets in soon after the trauma. In a functional psychosis an association with the trauma may be surmised when there is depression and anguish, associative and motor inhibitions or catatonic disturbances, in addition to the ordinary characteristic symptoms of the psychosis. To assume a connection with the trauma, the psychosis must have developed soon afterward and have been preceded by a prodromal period of altered psychic behavior.

54. **Breathing Therapy for Heart Affections.**—Herz believes that great benefit can be derived from endo-massage of the heart by expelling the air from the lungs in a series of jerks. This "staccato breathing," as Oertel called it, causes transient increase in the pressure in the thorax and thus acts indirectly on the heart from all around it, not from any one point alone. The participation of the abdominal muscles is superfluous, and for this and other reasons he has invented a little instrument which mechanically produces and controls the staccato expiration. The patient breathes into a tube connected with a wheel and ratchet below, which alternately open and close the outlet to the tube.

56. **Ship Sanatoria.**—Leyden outlines the desiderata for a floating sanatorium, and advocates sea voyages or a sea life in prevention and cure of scrofula, tuberculosis, etc. He advised eighteen lads from very consumptive families to enter the marine service, and only two out of the entire number have ever shown signs of tuberculosis, while their brothers and sisters, who preferred a sedentary life, have paid a very large contingent to the disease.

57. **Epidemic Cerebrospinal Meningitis.**—In this third installment of his official report Lingelsheim states that he succeeded in reproducing the clinical picture of epidemic meningitis in a monkey by instraspinal inoculation of human material.

59. **Injuries from Amniotic Constriction.**—Illustrations are given of two girls, each born with a groove around the arm or leg and paralysis or clubfoot. In one case the peripheral nerves had evidently suffered from the amniotic constriction of the arm just above the elbow, as the child exhibited radial paralysis and there was also partial ulnar paralysis. The cases throw light on the origin of certain cases of clubfoot and of paralysis of isolated peripheral nerves.

60. **Determination of Sensibility of Muscles and Joints.**—Curschmann describes his galvano-muscular technic with which he has been able to detect a reduction in the sensibility in incipient tabes when the findings by all other technics were negative. He determines the minimal "threshold value" of the sensibility, and then requests the patient to note whether a movement of the muscle accompanies the sting when the current is turned on. The patient is almost always able to differentiate the peculiar, brief sensation of movement in the muscles under electric stimulation, and the effect of the movement on the neighboring parts, and also to point out the course of the muscle involved. By this means it is easy to learn the strength of current necessary to induce the sensation of the contraction of the muscle. He gives tables of the findings on normal and diseased subjects and reviews the information to be derived from comparison of them.

61. **New Immunizing Means of Curing Tuberculosis: Bovine Tuberculin.**—Spengler's first announcement in regard to the value of immunization by means of bovine tuberculin was summarized in these columns on page 705 of vol. xliii. He here describes further experiences with his perlsucht tuberculin, its agglutinating properties, an attempt at autoinfection and a differential stain for the bovine tubercle bacillus. The serum of persons under treatment with persulcht tuberculin acquires remarkable agglutinating properties without a trace of a febrile reaction. The very first subcutaneous dose of perlsucht toxin induces agglutination five times as pronounced as with ordinary tuberculin, even when administered intravenously and in the largest dosage. The immunization obtained with the perlsucht tuberculin is a true, natural immunization, while that obtained with human tuberculin is a pseudo-immunization. His research and observation, he claims, have established beyond question the non-identity of human and bovine tubercle bacilli. The improved differentiating stain which he recommends is applied to a dry specimen, warmed, then stained with cold Ziehl's carbol fuchsin for one to five minutes without heating in the flame, but eventually in the incubator, without any acid treatment. The superfluous fuchsin is then rinsed off with 60 per cent. alcohol, after which a small drop of Loeffler methylene blue is added to the alcohol left, which is set on fire and the specimen moved to and fro until entirely covered with the stain. It is then rinsed, dried between blotting paper and then over a flame. The bovine bacilli stain bright arterial red and seem larger, thicker and longer than by any other technic, owing to the absence of any acid treatment. Human bacilli look thin, atrophic and are a bluish, venous red or violet tint. He states further that the bactericidal action of human and bovine tuberculin is different. An infection with living bovine bacilli runs a different course from that with living human bacilli. Spengler made a subcutaneous injection of 0.5 mg. of living perlsucht bacilli in his own arm. An abscess developed without glandular involvement or general disturbance. The ulcer persisted for eight months. The agglutinating properties acquired by his serum were no higher than after injection of killed perlsucht bacilli.

62. **Diagnosis of Influenza.**—Köppen has found constantly the albumin and diazo reactions in the urine as characteristic of influenza. The reaction is probably the result of the action of the toxins.

63. **General Narrowing of Aorta.**—Apelt found this condition as the cause of fatal heart affection in two young athletes. He thinks it was acquired by excessive physical exercise.

Münchener med. Wochenschrift, Munich.

64 (LII, No. 29.) *Ueber Spirochätenbefunde bei Syphilis. Rille.
65 *Die Spirochäten bei Syphilis. H. Ploeger.
66 *Neue Untersuchungen uber die Aetiologie der Syphilis. J. Siegel.
67 *Zum Nachweis der Azetessigsaure im Harn. L. Lindemann.
68 *Ueber Malakoplakie der Harnblase. E. Gierke.
69 *Die Behandlung der Prostatahypertrophie mit Röntgenstrahlen. L. Moszkowicz and R. Stegmann.
70 Zur Behandlung des Morbus Basedowii mit Antithyreoidin Möbius. A. Alexander.
71 *Congestive Hyperemia in Treatment of Acute Suppurations.—Zur Behandlung akuter Eiterungen mit Bier'scher Stauungshyperämie. Berlin.
72 Suggestions for Collective Cancer Research.—Wege der Sammelforschung über Krebs. K. Kolb.
73 (No. 30.) *Zur Aetiologie der Pneumonia crouposa. H. Schottmüller.
74 *Zur Pathologie des Bindegewebes (connective tissue). K. Vogel.

75 *Inflammatory Fatty Tumor in Knee or Foot.—Ueber entzündliche Fettgeschwulste am Knie und Fussgelenke. Gangele.
76 *Aspiration Treatment of Purulent Rhinitis.—Die Naseneiterung der Kinder und ihre Behandlung durch Saugen. R. Sondermann (Dieringhausen).
77 Head Support for Extension.—Der Extensionskopfträger. J. Hahn.
78 Weight-bearing Capacity of Floating Bodies as Test of Air in Them.—Ist die Tragfähigkeit "schwimmender" Körper ein sicherer qualitativer oder quantitativer Nachweis und Beweis für ihren Luftgehalt? F. Schroen.
79 "Waking Suggestion" Same as Hypnosis.—Ist Wachsuggestion erlaubt? O. Neustaetter.
80 Anesthesia and Operating Table.—Narkose-Wagen, zugleich Vorbereitungs- Verbands- und Operationstisch.

64. **Spirochetes in Syphilis.**—Rille's findings confirm those of others in regard to the almost constant presence of the *Spirochæte pallida* in fresh syphilitic lesions. He gives the particulars of 7 cases in which it was found, and cites the communications of others, and concludes that the sum total of the results certainly points strongly to the specificity of this germ in the etiology of syphilis. He recalls that Donné, discoverer of *Trichomonas vaginalis*, described in 1837 a microorganism in syphilis which he called vibriolineola. He found it in ulcerations on the vagina and penis, and once in a leg ulcer with hospital gangrene.

65. **Id.**—Ploeger states that 100 positive single researches are now on record with only a few negative findings, and more than 50 control researches on non-syphilitic subjects with invariably negative findings.

66. **Etiology of Syphilis.**—Siegel reports that he has succeeded in inoculating rabbits and guinea-pigs with syphilis from human material introduced into the tissues of the ear passages or into a scratch in the iris. He has thus inoculated 50 rabbits with syphilis. He has further inoculated 13 monkeys with the virus obtained from the infected rabbits, with positive results in every instance. The monkeys not only presented the primary, but in time also the secondary lesions of syphilis, as he shows by the illustrations of some of them. Siegel is the discoverer of the *Cytorrhyctes luis* flagellates in syphilitic lesions, for which he has been claiming causal etiologic importance. He found these germs in the lesions of all his animals, and is convinced that their causal connection with syphilis is beyond question as these findings parallel the clinical in every instance.

67. **Determination of Diacetic Acid in Urine.**—Lindemann asserts that the urine must be acid to obtain reliable results in testing for diacetic acid. He has simplified the Riegler test and recommends the following technic: The urine is rendered acid by adding 5 drops of 30 per cent. acetic acid to 10 c.c. of the urine, and then stirring into it 5 drops of Lugol's solution (1 part iodin and 2 parts potassium iodid in 100 parts water). The whole is well shaken and 2 c.c. of chloroform are then poured on top. The layer of chloroform does not change color in case of the presence of diacetic acid, while it turns red with normal urines. The reaction is more sensitive than the ferric chlorid test. When the Gerhardt test was still negative in a mixture of 0.5 c.c. of urine containing diacetic acid with 9.5 c.c. of normal urine, the new test gave the characteristic reaction. The test was always negative with normal urine even after administration of drugs, admixture with bile pigments, alcohol, glycerin, lactic acid and creatinin. The new reaction may be abolished by boiling the urine, and also by long contact with formalin.

68. **Malakoplakia of the Bladder.**—Gierke gives the particulars of 2 cases of this affection of the bladder. He ascribes its etiology to the primary action of a cystitic urine. After the primary lesion of the epithelium, the infiltrating urine degenerates, the cells swell and become impregnated with minerals, resulting in the appearance known as malakoplakia or cystitis in patches. Four out of the 9 cases on record were accompanied by tuberculosis.

69. **Roentgen Treatment of Hypertrophied Prostate.**—Moszkowicz has already reported 3 cases of enlarged prostate treated by application of the Roentgen rays through the rectum. He here continues his reports with 6 new cases. Unmistakable benefit was derived in every instance. The effect was most rapid and pronounced in the cases in which the anuria was of recent occurrence. The gratifying results and the harmlessness of the procedure commend it for extensive application, possibly supplemented by the action of radium in the urethra. In all the cases three sittings of from ten to eighteen minutes each had a pronounced influence on the enlarged organ and on the symptoms. The prostate subsided in size and micturition became more or less normal. In 3 of the cases the patients exhibited symptoms of arteriosclerosis, with indications of angina pectoris.

71. **Treatment of Acute Suppurations with Bier's Passive Hyperemia.**—Derlin relates the history of 2 cases of severe phlegmon of a tendon sheath and one of acute traumatic osteomyelitis of the humerus. All were treated according to Bier's directions by applying a tourniquet to the limb above until a "fiery red edema" had developed. The redder the parts the more violent the inflammation. The beneficial results were remarkable, he reports, and the lesions healed with trifling loss of tissue.

73. **Etiology of Croupous Pneumonia.**—Schottmüller describes a *Streptococcus mucosus* which he found constantly and in pure cultures in his total of 6 cases of croupous pneumonia.

74. **Pathology of the Connective Tissue.**—Vogel tabulates 124 cases of flatfoot, scoliosis, varices, hernias, hemorrhoids, pendulous abdomen, prolapse of uterus, rectus or intestines and emphysema, genu valgum and coxa vara. His tables show that several of these various affections are liable to befall the same individual. His argument is to the effect that they are all manifestations of some congenital anomaly in the connective tissue system. The entire stratum fibrosum is more or less abnormal in such persons, and the physician should examine them for other manifestations of this anomaly when he observes any one of the above affections. Some of the patients cited had six, but three or four was the average.

75. **Inflammatory Lipoma in Knee or Foot.**—Gangele has had occasion to observe several cases of the fat tissue tumors to which Hoffa recently called attention as a frequent consequence of slight trauma or inflammation. They are liable to occur in any joint and to cause severe disturbances. Gangele describes the cases of four patients promptly cured by surgical intervention.

76. **Aspiration Treatment of Purulent Rhinitis.**—Sondermann reiterates his former assertions in regard to the great value of aspiration as a means of treating purulent rhinitis. He has devised an apparatus for the purpose, and he says that it is amazing to see the quantities of purulent secretions which the aspiration removes. In many cases it is evident that some of the secretion must come from the accessory cavities. He has found that the aspiration treatment is equally effective for adults and for children, and that the latter readily learn to use the aspirator themselves. He advises its use four or five times a day in severe cases, and morning and night in the mild ones.

Therapie der Gegenwart, Berlin.

Last indexed page 953.

81 (XLVI, No. 7.) *Niels R. Finsens Krankheit (illness). A. Flöystrup and V. Scheel.
82 Ein neuer Detorsions-Tisch zur Behandlung der Skoliose (orthopedic table). G. Müller (Berlin).
83 *Indikationen und Kontraindikationen der Vaporisation des Uterus. K. Baisch. (Döderlein's clinic, Tübingen).
84 (No. 8.) *Zur Kasuistik der Hirn-Punktion (of brain). W. Weintraud.
85 *Febrile Enlargement of Liver in Syphilis.—Zur Frage der fieberhaften luetischen Leberschwellung. H. W. Reye.
86 *Attritin und Fibrolysin. F. Mendel.
87 Zur ambulanten Behandlung der Unterschenkelgeschwüre (leg ulcers). O. Moos.
88 *Gebrauch von Hals-Pastillen (throat pastilles). W. Zeuner.
89 *Ueber congenitale Pylorus-Stenose. E. Leow.

81. **Finsen's Disease.**—During the entire time of his principal life work Finsen suffered from severe chronic hyperplastic peritonitis with exudation. He studied to keep the ascites under control and took copious notes of the course and details of the disease, which are here reproduced in detail: Born on the Faroe Islands, near Iceland, at 2 years he had meningitis; at 13 pneumonia; at 16 jaundice; at 20 nephritis, and at 21 measles. From childhood he always had a slight blue and cold look, as if half frozen. At 23 the first digestive disturbances appeared, ascribed at first to gastric catarrh, but later

diagnosed as chronic peritonitis. The symptoms and autopsy findings were those of the affection known variously as "iced liver," "pericarditic pseudo-cirrhosis of the liver" or "chronic hyperplastic peritonitis with exudation." The ascites is the chief clinical manifestation, and the chronic peritonitis the predominant pathologic anatomic finding. In a case reported by Rumpf the patient was tapped 301 times, but Finsen required puncture only 18 times, as he kept the ascites under good control. The "iced" aspect involved not only the peritoneum and liver, but also the spleen, and there were evidences of a very old, adhesive calcified pericarditis. He experimented with "dry diet" as a means to reduce the ascites, and found that two or three days after reducing the intake of fluids to 325 or 400 gm. the diuresis increased remarkably and greatly reduced the ascites. Later the diuresis was not so easily influenced as at first and the restriction of fluids had to be still stricter to accomplish the same result. To enhance the diuretic action of the "dry diet" he took purgatives, finding that 7 gm. of calcined magnesia in 100 gm. oatmeal porridge eliminated from 700 to 800 gm. fluid by the intestines while the kidneys excreted about the same amount. Distaste for the magnesia led to substitution of ammonium chlorid or sodium sulphate later. The drug always had to be used in connection with restriction of intake of fluids or the diuresis was insignificant. By these means Finsen was able to keep the ascites under control for several years. He was convinced that he would have been incapacitated for work many times in the course of those years if he had trusted to punctures and ordinary treatment. In 1900 he began to study the influence of salt on his condition, and continued for months his careful research on the metabolism of salt in comparison with other physical findings. His tabulated data are a valuable contribution to the literature on the subject. He found that the largest proportion of salt was eliminated when he was on a salt-free diet. Also that ingestion of a considerable amount of salt seemed to have a depressing influence on his capacity for eliminating it. The high specific gravity of the ascitic fluid and large proportion of albumin indicated that his ascites was an inflammatory exudate and not a mere effusion. There was no compression of the portal vein and no indications of tuberculosis.

83. **Steam Cauterization of Uterus.**—Baisch reviews the present status of vaporization of the uterus, the method of treatment introduced by Sneguireff some years ago and advocated especially by Pinkus. His conclusions are that the method is unreliable, the action sometimes being too profound and again too slight, the thickness of the mucosa being a variable quantity. The success of the procedure depends on chance. The only indication which he accepts for vaporization is the preclimacteric uncomplicated hemorrhage in chronic metroendometritis. In this condition it may answer the same purpose as the otherwise necessary hysterectomy, and hence may be regarded as a valuable measure in these circumstances. It should never be attempted, however, until after a malignant process has been certainly excluded. Zestocausis is a modified form of vaporization; the steam is kept enclosed in a metal catheter and produces a kind of weak thermocauterization. The literature cited embraces 57 articles.

84. **Puncture of the Brain.**—Weintraud reports 4 cases in which he bored through the skull with an electric drill and punctured through the opening thus made. In the first case a woman of 53 had presented indications of sensory aphasia and facial paralysis. She became comatose, and the skull was drilled and punctured at the aphasia center and fluid was aspirated. The lesion proved to be a large tumor at this point. If it had been an abscess the puncture would have had a direct therapeutic effect. In the second case a young woman had attacks of vomiting, finally accompanied by headache and choked disc. The right lateral ventricle was punctured three times and the headache was always relieved at once. The retarded pulse returned to its former state in a day or so, but the choked disc did not retrogress. The pressure in the brain did not seem to be very high in this case, but the relief from puncture was remarkable. The findings suggest that the brain substance must be already injured by the compression when signs of compression of the brain become apparent. In another case puncture of the lateral ventricle for symptoms of a brain tumor failed to relieve. Not a drop of fluid could be aspirated and nothing was found postmortem to explain the symptoms. Weintraud thinks that the affection responsible for the symptoms must have been a swelling of the brain, and that negative puncture in such a case should be accepted as an important aid in the diagnosis of this condition. He urges more general adoption of exploratory drilling and puncture, confident that in many cases it may bring relief and even cure. The latter might readily occur in case of a solitary tubercle already in retrogression but becoming dangerous by the accompanying internal hydrocephalus.

85. **Febrile Affection of Liver in a Syphilitic.**—The possibility of an isolated febrile syphilitic enlargement of the liver has been discussed considerably in the last few months. Reye here describes a case in which the symptoms suggested abscess formation in the liver in a syphilitic, but they all vanished under specific mixed treatment. The patient had been infected with syphilis eight or nine years previously.

86. **Intravenous Medication.**—Mendel is convinced that the intravenous route is free from danger for the patient and that with correct technic and appropriate drugs, it is destined to prove an important factor in the renaissance of pharmacodynamic therapy. His experience with the salicylates and thiosinamin administered intravenously has been extremely favorable.

88. **Disinfection of the Tonsils.**—Zeuner recommends pastilles made of guaiac flavored with some aromatic substance, to be used as a disinfectant and in treatment of the tonsils. Whenever there are any indications of sore throat one of these pastilles slowly dissolved in the mouth will be found very useful to avert further trouble and to cure the pathologic tendency of the tonsils.

89. **Congenital Stenosis of the Pylorus.**—Loew relates a case of this condition in which remarkable improvement followed the administration of a tablespoonful of an alkaline mineral water after eating. This evidently neutralized the hyperacid secretions and thus abolished the condition causing the reflex stenosis.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

MANUAL OF ORGANIC MATERIA MEDICA AND PHARMACOGNOSY. An Introduction to the Study of the Vegetable Kingdom and the Vegetable and Animal Drugs, Comprising the Botanical and Physical Characteristics, Source, Constituents, Pharmacopeial Preparations, Insects Injurious to Drugs and Pharmacal Botany. By L. E. Sayre, B. S., Ph.M. Third Edition, Revised, with Histology and Microtechnic by W. C. Stevens. Cloth. Pp. 692. Price, $5.00 net. Philadelphia: P. Blakiston's Son & Co., 1905.

DEPARTMENT OF THE INTERIOR BUREAU OF GOVERNMENT LABORATORIES. I. Birds from the Islands of Romblon, Sibuyan, and Cresta De Gallo. II. Further Notes on Birds from Ticao, Cuyo, Culion, Calayan, Lubang and Luzon. By R. C. McGregor. Paper. Pp. 34, with 10 Illustrations. Manila: Bureau of Public Printing, 1905.

DEPARTMENT OF THE INTERIOR BUREAU OF GOVERNMENT LABORATORIES. I. Description of New Buildings, by P. C. Freer, M.D., Ph.D. II. Catalogue of the Library, M. Polk, No. 22. Paper. Pp. 319, with 27 Illustrations. Manila: Bureau of Public Printing, 1905.

EXERCISES IN PRACTICAL PHYSIOLOGY. By A. D. Waller, M.D., F.R.S. Part II. Exercises and Demonstrations in Chemical and Physical Physiology. By A. D. Waller and W. L. Symes. Paper. Pp. 79. Price, 90c. New York: Longmans, Green & Co., 1905.

THIRD ANNUAL REPORT OF THE SUPERINTENDENT OF THE BUREAU GOVERNMENT LABORATORIES, for the Period from September 1, 1903 to August 31, 1904. Paper. Pp. 105. Manila: Bureau of Public Printing, 1905.

PROCEEDINGS OF THE AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION. At the Sixtieth Annual Meeting held in St. Louis, Mo., May 30-June 3, 1904. Cloth. Pp. 470. Pub. by the Association, 1904.

DISEASES OF THE ANUS AND RECTUM. By D. H. Goodsall, F.R.C.S. and W. E. Miles, F.R.C.S. Part II. Cloth. Pp. 271. Price, $2.00. New York: Longmans, Green & Co., 1905.

ANNUAL REPORT OF THE ESSEX COUNTY HOSPITALS FOR THE INSANE. For the Year Ending April 30, 1905. Paper. Pp. 67. New Jersey: Grocbe-McGovern Co., 1905.

PROCEEDINGS OF THE PATHOLOGICAL SOCIETY OF PHILADELPHIA. New Series. Vol. viii, No. 3 1905. Paper. Published by the Society, 1905.